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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2136

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CONTENTS

BRIEFS

YUGOSLAV TOBACCO TO USSR--Within the framework of trade between Yugoslavia and the Soviet Union to 1985, an agreement was signed in Moscow for delivery to the USSR this year of 4,000 tons of tobacco. "Makedonija tabak", which represents the Macedonian tobacco and cigarette producers, by the end of the year is to sell 2,450 tons of tobacco of the Prilep and Jaka varieties and 2,400 tons of cigarettes of the Kaneo, 06 and Filter Jugoslavija brands. The total value of the Yugoslav export of tobacco and cigarettes to the Soviet Union in 1981 will amount to something more than $21 million. During the negotiations the Soviet side expressed special interest in further increasing the import of higher quality Yugoslav cigarettes. [Text] [Skopje NOVA MAKEDONIJA in Macedonian 16 May 81 p 1]

CSO: 2800/235

POTATO PRODUCTION TRENDS IN CSSR 1975-1985

Bratislava EKONOMIKA POLNOHOSPODARSTVA in Czech No 4 Apr 81 pp 189-190

[Article by Eng Frantisek Strasil, ScC, Institute for Research and Improvement of Potato Cultivation, Havlickuv Brod: "Potato Production According to Consumption Trends"]

[Text] Four types of consumption must be recognized in potato production: early potatoes for human consumption, other potatoes for human consumption, seed potatoes, and industrial potatoes. Each type of potatoes for consumption requires specific soil conditions, technology of cultivation, different consumption of labor and different production costs.

Potato-Growing Areas

From the review of the potato acreage in the CSSR in 1975-1979 it is obvious that potatoes for other types of human consumption were planted on the largest area which amounted to 12,165 [sic]-158,747 hectares, i.e., 57.9 to 63.4 percent of the total potato-growing acreage. Early potatoes for human consumption were cultivated on the smallest area, namely, 16,582 to 17,060 ha, i.e., 7-8 percent of the total potato-growing acreage. Seed potatoes were grown on an area of 53,000 to 62,500 ha, i.e., 25 percent of the total potato-growing acreage. Industrial potatoes were cultivated on an area of 12,000 to 25,000 ha, i.e., 6 to 11 percent of the total potato-growing acreage. In projection for 1985, it is envisaged that the total potato-growing area in the CSSR will be reduced to 188,500 ha and consequently, the acreage for the cultivation of other food potatoes will also be reduced. Early potatoes will be planted according to the plan on 14,500 ha, seed potatoes on 48,000 ha, industrial potatoes on 19,300 ha, and other food potatoes on 96,700 ha. The above-mentioned acreage planned for potato cultivation will satisfy the planned consumption of potatoes in the CSSR.

Acreage, Yield and Harvest of Potatoes in the CSSR According to the Trends of Consumption in the Period of 1975-1979 and in 1985

Year	Trend in Potato Consumption				
	Early Food Potatoes	Seed Potatoes	Industrial Potatoes	Other Food Potatoes	Total
Potato Acreage (ha)					
1975	17,060	62,500	12,000	158,747	250,307
1976	16,242	60,000	24,000	139,852	240,094
1977	16,467	58,500	22,000	137,434	234,401
1978	15,333	55,000	25,000	124,260	219,593
1979	16,582	53,000	20,000	123,165	212,747
1985	14,500	48,000	19,300	96,700	188,500
Yield of Potatoes (t/ha)					
1975	12.56	16.20	13.30	13.72	14.24
1976	10.30	19.40	16.40	18.30	17.55
1977	11.71	18.10	15.10	15.83	16.04
1978	12.59	19.80	17.20	18.17	18.19
1979	12.86	19.10	16.50	17.54	17.51
1985	13.40	20.40	23.40	23.50	20.70
Potato Harvest (t)					
1975	214,222	1,012,500	159,600	2,178,317	3,564,639
1976	167,350	1,164,000	293,600	2,588,706	4,213,656
1977	192,843	1,058,850	332,200	2,175,880	3,759,773
1978	193,026	990,000	430,000	2,382,079	3,995,105
1979	213,322	1,012,300	330,000	2,160,089	3,724,711
1985	194,300	979,200	450,000	2,276,500	3,900,000

Yield of Potatoes

The per hectare yields of potatoes in individual areas of consumption vary. Early potatoes produced the lowest yields in 1975-1979, namely, 10.30 to 12.86 tons per hectare [T/Ha]. Seed potatoes produced the highest yields with 16.20 to 19.80 t/ha. Approximately identical yields were reported for industrial potatoes and other food potatoes. The yields amounted to 13.30 - 17.20 t/ha for industrial potatoes and 13.72 - 19.17 t/ha for other food potatoes. The average yield of potatoes in the CSSR was 14.24 to 18.19 t/ha. In projection for 1985, average yield of potatoes

amounting to 20.7 t/ha is envisaged, of which approximate yields in individual areas of consumption will be as follows: early potatoes 13.4 t/ha, seed potatoes 20.4 t/ha, industrial potatoes 23.4 t/ha and other food potatoes 23.5 t/ha.

Potato Harvest

Potato harvest in the CSSR fluctuated in 1975-1979 from 3,564,639 to 4,213,656 tons, with a high in 1976 and a low in 1975. In other years it remained on about the same level of approximately 3.8 million tons. Early potatoes produced the lowest harvest of 167,350 to 214,222 tons, i.e., 4-6 percent of the total potato harvest. Other food potatoes produced the highest harvest of 2,160,089 to 2,588,706 tons, i.e., 60 to 61 percent of the total potato harvest. The harvest of seed potatoes yielded 990,000 to 1,164,000 tons, i.e., 24.8 to 27.6 percent of the total potato harvest. In projection for 1985, total potato production of 3.9 million tons is planned in the CSSR, of which a yield of 194,300 tons of early potatoes, 979,200 tons of seed potatoes, 450,000 tons of industrial potatoes, and 2,276,500 tons of other food potatoes are envisaged. The above-mentioned gross yields of potatoes will satisfy the planned consumption of potatoes in individual areas of consumption in the CSSR.

Deployment of Potato-Growing Areas

Early potatoes are cultivated in areas growing potatoes for early consumption, such as the Polabi area, South Moravia and also South Slovakia. They are produced for an early delivery of food potatoes to the market in the period from 15 June to the end of July.

Industrial potatoes are grown mainly in the proximity of processing enterprises, i.e., starch factories, with the most widespread acreages in the okreses of Havlickuv Brod, Svitavy, Eplhrimov, Jindrichuv Hradec, Tabor, Klatovy, Opava, Bruntal, Trebic, Zdar nad Sazavou, and Jihlava. Industrial potatoes are utilized in the production of starch for household use and for export.

The cultivation of seed potatoes is concentrated in potato-growing areas, mainly in the okreses of Benesov, Prague-East, Jindrichuv Hradec, Cesky Krumlov, Klatovy, Plazen-South, Havlickuv Brod, Svitavy, Jihlava, Trebic, Zdar nad Sazovou, Bruntal, Opava, Sumperk, Liptovsky Mikulas, Martin, Dolny Kubin, Zilina, Bardejov, Poprad, Presov, Spisska Nova Ves, and Stara Lubovna. Seed potatoes are important for potato production. Their yields depend on the quality and regular rotation of crops. The above-mentioned cultivation areas include propagation areas as well as nursery units selected from areas of general cultivation. The propagation area comprises 75 percent of the above-mentioned seed-cultivation areas.

Other food potatoes are grown in every okres to supply the pupulation with food potatoes. In our country, approximately 90 kg of potatoes are consumed per citizen.

The cultivation of potatoes according to the trends of consumption and its deployment are important factors for the establishment of enterprises specializing in single-purpose consumption and for the determination of concentration in potato production. In our country, concentration of potato production for single-purpose consumption has only begun. Very few of our enterprises have been specialized in this respect. Most agricultural enterprises grow potatoes for two purposes of consumption. Concentration of potato production for individual purposes has been planned in our country in detail up to the level of the okreses, and in certain okreses it was specified to the level

of agricultural enterprises. It is envisaged that specialized agricultural enterprises will intensify their production of potatoes.

At present the above-mentioned yields of potatoes remain on a low level and fail to make the production of potatoes for individual purposes profitable. In order to earn certain profits it will be necessary to achieve yields of early potatoes equal to 13 t/ha, seed potatoes 20.5 t/ha, industrial potatoes 23 t/ha, and other food potatoes 23.5 t/ha. Those yields are planned for the production of potatoes in the CSSR in 1985.

9004
CSO: 2400/176

SITUATION, TASKS OF TELEPHONE SERVICE FACILITIES EXAMINED

Budapest FIGYELO in Hungarian No 17, 29 Apr 81 pp 1,6

[Article by Csaba Vertes: "The Telephone, One Hundred Years Later"]

[Text] The telephone switching center is sensitive but not easily insulted. Thus, tactfulness can be omitted on the occasion of its centennial in Budapest. Rather, the 100-year-old Hungarian telephone network needs conscientious diagnosis and even more conscientious healing work because it has been struggling with neglected maladies. And the method of healing--even though many people believe and preach this--cannot be limited to injecting more and more money.

Even though we have no reason for celebration, there is no harm in reminiscing. In the 15 May 1881 issue of VASARNAPI UJSAG [Sunday Newspaper]: "The telephone has been operating since first day of May in continuous service in the capital city, and has proved to be very practical." Five days later, in the PESTI HIRLAP (one of the first 50 subscribers): "The telephone developed laryngitis because of the joyful noises the capital city has been making. No use speaking into the devilish contraption, we get no reply. So we run down to the central office to thunderingly create a huge spectacular [confrontation], but we come out of the office throwing the thunders intented for the telphone at the decorations of the houses." ("The decorations of the houses"--flags, drapes, carpet, and strings--greeted crown prince Rudolf along his path in the city. And because they leaned on the aerial lines installed along the walls of buildings, the telphone "developed laryngitis.")

There were other problems also. The VSARNAPI UJSAG reports that "people have spoken up against stringing up the capital city with wires. The news circulating is that the many poles and cables would promote the danger of lightning." And even this: "The wires will not allow smoke to rise and will close the streets off to air." But, relax--the paper cautions--, because "the time will come when the telphone lines will be installed underground."

It did come. And because underground cables often get wet, the telephone "develops laryngitis" nowadays, too. And there is no use creating a "huge spectacular" in the "central office," as they would only provide the same suggestion as in the past: "Throw the thunderbolts intended for the telephone" anywhere else, but not at them. And really: the "central office" is not in an enviable situation....

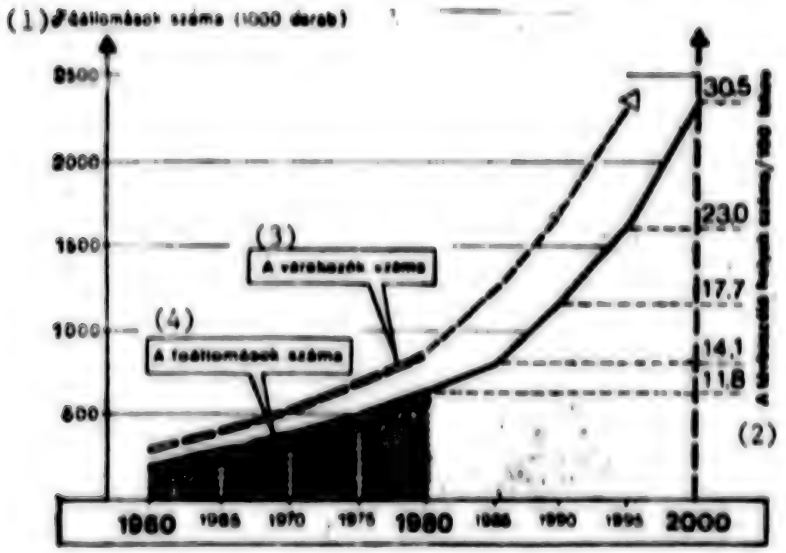


Figure 1. Growth of the Number of Main Telephone Stations and Subscribers to 1980 and Its Expected Growth to the Year 2000

Key:
(1) Number of main stations (thousands)
(2) Number of telephones per 100 people
(3) Number of people waiting for service
(4) Number of main stations

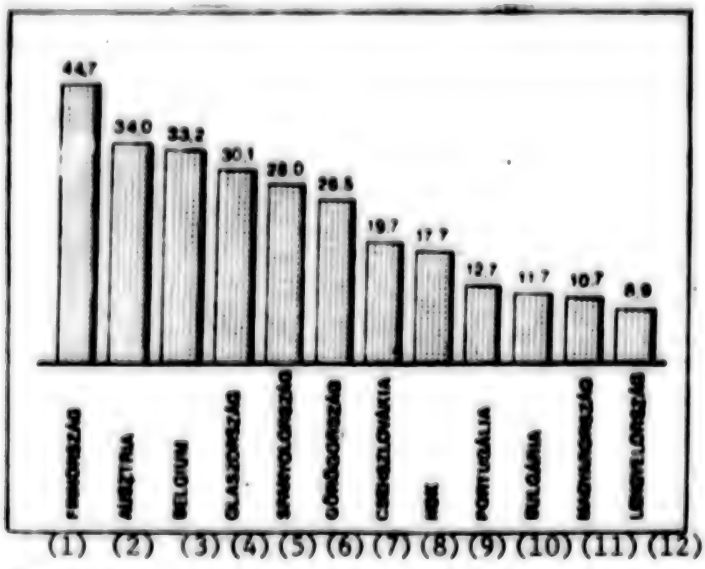


Figure 2. Number of Stations per 100 People in Various European Countries (1979)

Key:
(1) Finland
(2) Austria
(3) Belgium
(4) Italy
(5) Spain
(6) Greece
(7) Czechoslovakia
(8) GDR
(9) Portugal
(10) Bulgaria
(11) Hungary
(12) Poland

Attempts Worth 4 Billion

In countries with a similar level of development as ours, the share of the money earmarked for communication investments is at least 2 percent. We have never been able to afford that: even in the "best years" it reached only 1.6 percent at most.

The way the experts put it: At this time, improvements of at least two 5-year plan periods are missing from the telephone network. This--it seems--could also be an answer for the questions seeking the root of all the problems and difficulties. For example for this one: Why did we fall behind the European average in the so-called telephone density? (The number of "talking stations" per 100 people is 10.7 in Hungary, the European average is 21.8, while the world-wide average is--is this any consolation?--10.2. In the most highly developed countries the ratio is 6 to 7 times as high as in Hungary.) In contrast with 6 percent annual growth rate developing the telephone network in the European socialist countries, Hungary presently participates statistically with only 3 percent. Surprising disproportionations can be discovered even within this network which--to phrase it as tactfully as possible--has been developed at a moderate rate and is largely obsolete, and therefore operates unreliably. Two million people in Budapest are using 58 percent of all the main stations, while only 10 percent of the main stations remain for the 4.8 million inhabitants of the villages.

Furthermore: 70 percent of the telephone traffic is handled by 121,000 business phones and 68,000 main lines for the subcenters with their 565,000 extensions; the 356,000 private telephones handled the balance. This latter adds 8 percent to the postal service's income derived from the telephone service. (Just a footnote: even though this ratio is unique in Europe, from the business viewpoint the wild growth of business telephones is not exactly bad....) This 70-to-30 percent ratio is one reason--and perhaps the main reason--that there is only a 30 percent chance in Hungary that connection will be made between the calling and called party. The worldwide average is 70 percent. This is how the postal service calculates it: those who can speak (about 8 million people) would also like to make phone calls (on half-a-million telephones). Thus 7.5 million people--being in a difficult situation because they have no telephones in their homes--make the most of their phone calls on the business network. But it was not sized to handle this. Therefore, the 70-to-30 percent ratio should be reversed.

Let's dig even deeper now in the network of subcentrals. The ratio of incoming and outgoing lines is far from the optimum. Recently, instead of the desirable 40 percent of the circuits, only one-fourth of the United Incandescent's [alarge business enterprise] circuits "accepted" calls. The rest were "outgoing" lines, obviously because it is more important for me to be able to call than it is to be able to be called.... And our chances are even less when we dial the switchboard of BHG [Beloiannisz Telecommunication Factory], for example: its 66 main circuits have 785 extensions, onto which they connected 125 other telephone instruments.

Just for the sake of completeness we mention that 16 percent of the switchboards have long ago become irresurrectably obsolete, and 33 percent of them are ripe for major overhauls and extensive maintenance. Each year, equipment equivalent to 10,000 to 13,000 line capacities should be replaced at enterprises expense. The postal service does not even have enough money to put the large central in order, thus it has the reason and is justified to request the enterprises and institutions [to do this] on the basis of fairness. (However, according to the written law all subcentrals [switchboards] are owned by the postal service. This is regardless of who financed its acquisition and installation.)

Instead of giving further details about general situations, let us look at how useful the telephone is in the final analysis. It is immeasurable. However, the damage can be measured: according to the OMFB [National Technical Development Committee] we wait 2 billion minutes a year for a line during the daylight hours with receiver in hand. Considering only postal service costs, this totals 2 to 4 billion forints! This is equivalent to the working time of 14,000 people for an entire year.

And--at least in the next 5 years--no improvement can be expected. On the contrary, by 1985 we will fall back to the end of the European list. A whole series of studies were made in the past showing that in 10 to 15 years we can catch up to, and even pass, the European average. The experts admit today that we need at least 15 years to catch up somewhat even to ourselves. Thus, in the next 5-year plan periods we will have to run faster and faster just to stay in place....

Center, Cable, Equipment

Three things are needed for making phone calls: a center, cable, and instrument. Let's take them in order.

The ancient LB-type manual plug-in switchboard, powered locally by batteries, in 93 years grew into the automatic crossbar system. (That is in some places. In the overwhelming majority of the country's settlements there still are about 2,300 obsolete LB and CB-type manually switched main switchboards today, and only 8.4 percent of the main switchboards are automated. We are in last place in Europe with this.) The rotary switchboard characterizes the heroic era following prehistoric [sic] times. We bought the crossbar license from the Ericsson company of Sweden in 1968; adaptation required 6 years (!), and the first Hungarian crossbar came out in 1974.

Rotary and crossbar: both are automatic systems. The former operates with a rotating switching apparatus system, relatively slowly and with very high maintenance costs. The latter makes connections with signal catchers in a connecting field set up as a matrix, much faster and with minimal maintenance requirements. Thus, the crossbar is better than the rotary. This is one of the reasons the Ericcson firm came out with the crossbar in the very early 1950's.

However, knowing the crossbar's history in Hungary, the above statement must end with a questionmark. Is the crossbar--specifically the Ericsson crossbar--really better than the rotary?

Academician Laszlo Kozma says: Since the mid-1950's, it has become obvious that the license for some other system must be bought to replace the rotary." (An interjected note: The Hungarian telephone industry has always manufactured [its products] on the basis of licenses. The rotary switchboards are various ITT models; a Soviet institution developed and manufactured the so-called kolkhoz centrals in large numbers; and even though in the case of subcentrals the BHG became independent [has its own design], actually even this cannot be considered as independent system development.)

Laszlo Kozma again: "The grade journals had articles on electronic telephone switching centers as early as the 1960's. Leaders of the postal service and industry thought: Why can't we skip the stage between the crossbar and the rotary, and goto electronic centrals?; why couldn't we switch over immediately to the electronic centers? It became obvious after long negotiations that the foreign companies we sought out could not offer an acceptable solution, so let the Swedish crossbar license remain. The Ericsson firm said that with the aid of their instructions and special tools the BHG in 1 year could produce centers to service 100,000 subscribers annually. But the BHG was in no rush to adapt the license. On the contrary, since the postal service was also buying centers from the Swedes (for Lagymanyos), it seemed as if the factory were afraid to compare the original and the domestic products. It continues to produce large numbers of the kolkhoz centrals and it just poured out the subcentrals, which the enterprises had the money to buy."

(Another interjection): During the years of slow adaptation, more and more was being said in "well-informed circles" that a mistake had been made with the [purchase of] Swedish ARF equipment. It is obsolete, and we should have made the jump from rotary to electronic, or at least to quasi-electronic centers. This means that the center's switching field is electromechanical, but its control is electronic.

Laszlo Kozma: "At the time we bought the license, every enterprise in the world making telephone centers was producing larger and larger quantities of crossbar machines. Only a few samples of quasi-electronic centers existed. And, as far as Ericsson was concerned: in 1977, that is, 9 years after the license purchase, Ericsson centers with 23 million subscribers were in operation all over the world, and the factory had orders for centers to service another 8 million subscribers. Then why weren't these centers good enough for us?"

Perhaps one reason is that the fixed unit price of rotary centers was 4,500 forints per subscriber. But the unit price of the ARF, as new product, was established at 7,500 forints. The postal service decided that--partly because crossbars could not be used to expand the rotary system--it would order rotary equipment for about 80,000 subscribers. And also order a few smaller ARF-type centers, to [be able to say that it] help[ed] in making it available domestically.

The great test of strength of license domestication was replacing the Belvaros [Inner City] with ARF. The postal service contracted the job in the early 1970's. The BHG did not meet one single deadline (which it itself had set). Due to the series of missed-deadline penalties, they had to pay, they finally decided to deliver untested equipment and to test it in the field. The results are well known....

Sand Instead of Copper

After this eventful crossbar story we should not be surprised at the opinion of postal service experts today: "The rotary cannot be phased out. There are quite a few of them operating in France, and the Erzsebet center built in 1938 still makes the connections reliably."

In the meanwhile, some of the experts continued to be occupied with the feasibility of making the "jump." Their idea was that the license for a fully electronic center would give a significant forward push to the Hungarian telephone situation. Just a year ago others argued and asked: From where and from whom could an electronic license be purchased, when such a system is not yet operational anywhere in the world--except for a few American battleships? Then came last year's World Communications Fair, where the trade "exploded." Electronics and more electronics, and complete systems to boot. Its advantages are unfathomable in comparison with the crossbars and the quasi-electronics. It is inexpensive (tiny quartz crystals instead of tons of steel and copper); it operates reliably (as indicated by the unbelievably low maintenance requirements). It can be installed in a small area. In one word it is much more economical than anything else. According to the latest market research, everyone-even the Third World--wants only this since it was introduced. The possible license purchase would also mean a favorable export position for the Hungarian telecommunications industry. Assuming that a quick decision is made in this case, and that adaptation will not proceed at a "crossbar rate."

Of course, there is a great need for the ARF centers even until then. The goal is to achieve at least 17 to 20 percent telephone density by 1990, and 30 to 32 percent by the turn of the century. To do this, equipment to serve about 1.5 million subscribers would have to be produced in the first 10 years, and in the meanwhile the old centers would also have to be replaced. In possession of the ARF license, the BHG in 9 years did not even produce equipment for 100,000 lines.... Then what do we believe in?

Water Lines

The cable network is an even bigger problem if this is possible. The length of lines between cities is about 36,000 kilometers. About 2,000 of the 2,511 local networks can now be reached only by the most unreliable aerial circuits. Of course, the situation is much better in the larger cities: 97 percent of the networks operate with underground cables, but its technical condition is critical--especially in the capital city. The cable tunnels are disorganized, frequent damage to the cable housings--to use the trade terminology--make the network "weather sensitive." The international average is 10 cable problems per 100 kilometers. In this country we have to contend with 62 problems per 100 kilometers. And no wonder: the more reliable underground cable took over the leading role from the, until then, mostly aerial network only in 1974. (There are an average of nine times as many problems with aerial cables per kilometer as with underground cables.)

Thus nationally most of the underground cable network is not very old, and knowing this, many people ask: then why is the theory of "old age," heard

constantly? That is, that most of the cable network is prehistoric and has gone to ruins. Partly because this really is the situation in the capital and in the other larger cities, and partly because the metal-covered and paper-insulated cables per underground a few years ago are also "weather sensitive." The plastic-insulated cable was invented abroad in the early 1950's to replace them. When this is damaged it acts as a virtual water pipeline. A new idea [came] from England in 1963: The plastic cable should be filled with vaseline which is commonly known as a good water repellant. The English postal service accepted the vaseline cable as standard, after brief experimentation. Fifteen years later the Hungarian postal service also decided to accept the solution for its system.

But we already know that the real solution is microwave transmission. The tower on Szechenyi Mountain has been providing the connection of five centers in the capital city (Kristina, Lagymanyos, Ferenc [varos], Jozsef [varos], and Ujpest) with each other since last year. This eliminates the problems caused by damage to the so-called transfer cables between the centers which can paralyze telephone traffic between different parts of the city. According to long-range plans, Budapest and its vicinity would be "received" by four tower stations. Of course, even until then the most urgent task is to bury the tremendously long aerial cable network under the ground. Because even in Budapest there are 800 kilometers of aerial cables above the 8,400 kilometers of underground cables.

We Need Money! But for What?

For telephones, or if you like, for talking stations." It can be seen on the figure in the introduction that for the most part the growth of this country's telephone system between 1960 and 1965 kept up with the demand. (The writer of these lines, for example, obtained his telephone in 1964 by the telephone installer ringing the doorbell unexpectedly at his apartment in Zuglo, saying: "If you want a telephone by any chance, I am here...." And as long as he was there--expansion of the Zuglo center had just been completed--, why should he keep lugging around the phone which was awaiting installation?) News is that at times and at certain (development) locations such door-to-door salesmanship has also occurred since, but the number of people on the official waiting list increased from 26 percent in 1965 to 42 percent of the main stations connected last year.

Six percent of the present 260,000 applicants are hoping for the installation of main lines for public entities, and 94 percent for home telephone installation. The 6 percent public entities represent 100,000 phones, including also the extensions of the subcentrals [switchboards]. Most (62 percent) of the applicants are in the capital city, but the postal service knows that soon they will also receive great pressure from the "districts." This is one of the reasons why they emphasize that the 30 to 32 percent phone density planned for the turn of the century is a minimum program to be implemented under all circumstances. It is a different question that today they cannot yet see the conditions and possibilities of implementation. They say that the money will not be enough. We add that it is yet clear for what the money is needed.

Is it needed for the reconstruction of the existing network, or for a general expansion of the network, or for technological growth? The postal service thinks that the most important and most urgent task is to achieve at least that those be able to make phone calls who have telephones. Reconstruction cannot be postponed, and all other developments of major proportions can come only after that.

In this area again the professional opinion is divided into two camps, but regardless of the new debate, attention must also be paid to many-many other tasks. For example, to the operating conditions of the radiotelephone network which is spreading on the basis of private initiatives. Consideration must be given to the emergency solutions dictated by the temporary needs (containerized centers, party line telephones operated on the KIEL system, the possibilities of pairing private main lines).

And, of course, thought must also be given to improving service: automatic wake-up system, a charge [fee] indicator which can be installed next to the telephone, pushbutton equipment (if the rotary, crossbar, and electronic systems could work together). Integration of the switchboards into the number bank of the main centers [i.e., "direct" numbers for extensions. Translator], so that an operator would not be needed for each switchboard; patching radiotelephones into the cable network; creating the conditions for conference calls (if the crossbar and the electronic systems would dominate the domestic telephone system more than they do now). And, in the case of electronic centers, the abbreviated call number, and automatic routing of the calls (that is, expanding the service used in the switchboards, to cover the main centrals), and the so-called parking [holding] of the calls so that repeated dialing is not required.

All variations, all possibilities are included in the postal service plans to the turn of the century. The only thing not known exactly is at what rate will the Hungarian telephone system finally grow? It would not hurt to clearly define the optimum goal coordinated with the other plans of the national economy, as well as to define the minimum, less than which we cannot allow because it would endanger the flow of information on which our economy thrives.

8584
CSO: 2500/245

ALUMINUM INDUSTRY SIXTH FIVE-YEAR PLAN OUTLINED

Budapest MAGYAR ALUMINIUM in Hungarian Nos 11-12 1981

[Article by Dr Laszlo Kapolyi, state secretary: "The Tasks and Possibilities of the Aluminum Industry in View of Preparing the Sixth Five-Year Plan]

[Excerpt] The Development of the Hungarian Aluminum Industry

Let us examine in the following how the Hungarian aluminum industry and its development concepts are adjusting to the altered situation and to the economic political guidelines of the Sixth Five-Year Plan.

Problems with the Alumina-Aluminum Agreements

In the 1950's Hungary had an energy shortage. Therefore, in the framework of international cooperation we sought the development of the Hungarian aluminum industry such partners as had relatively ample electric energy. The basic condition for the cooperation was that both parties to the agreement should mutually find their own benefits.

We signed the first agreement in 1960 with Poland and in this framework, starting in 1965, we received 17,500 tons of raw aluminum in exchange for 80,000 tons of Hungarian alumina. The relative volume of the exported alumina and the returned aluminum, at CEMA prices, corresponded at the time to the price ratio for alumina and aluminum in effect in 1960. In the past 20 years, as is well known, this price ratio has changed significantly. Today 1 ton of aluminum corresponds to the value (price) of about 8 to 8.5 tons of alumina. Unfortunately, we did not succeed in reconciling the differences stemming from this change, and thus the Hungarian-Polish agreement was not extended beyond 1980.

We signed the Hungarian-USSR alumina-aluminum agreement on 12 November 1962. Under its terms, the alumina and aluminum deliveries were set to begin in 1967 or 1968 in a product ratio corresponding in practice to the ratio of the metal content. The quantities, too, were made known: gradually increasing until in 1980 we received 165,000 tons of aluminum for 330,000 tons of alumina.

The 1962 agreement was valid until 1980 with the option to extend by mutual agreement of the parties. It was in fact first extended in 1975, and the Hungarian-USSR alumina-aluminum agreement will be in effect until 31 December 1985.

The Hungarian-USSR alumina-aluminum agreement made it possible for us to save the metallurgical capacity necessary for processing alumina and the investment funds that would be needed, for the power plant providing foundry energy and for the mine providing the power plant with energy sources.

The Central Development Program for the Aluminum Industry

Considering the foregoing, we had available at the national economic level a combined total of 256,000 tons per year of primary metal sources, that is, 73,500 tons per year from domestic foundry production, 165,000 tons per year from the Hungarian-USSR alumina-aluminum agreement.

Since the processing industry belongs to enterprises that are under various ministeries, it required about a decade to fix the long term development concept in the central development program. The developments called for in the approved programs enjoy important advantages.

The government first approved the central development program of the aluminum industry in 1971 for the Fourth Five-Year Plan period, and then in 1976 for the Fifth Five-Year Plan period. Earlier, our metal resources increased dynamically, exceeding the considerable increase in domestic aluminum consumption. Under the Fifth Five-Year Plan, however, the expansion of metal resources was less than the increase in the domestic metal demands. As a consequence, the exportable volume of metal declined slowly but continuously.

At the request of the National Planning Office and on basis of the method it made available, the technical-economic study of the aluminum industry's central development program was prepared for the Sixth Five-Year Plan in three versions through the cooperation of the NIM [Ministry of Heavy Industry] and the MAT [Hungarian Aluminum Industry Trust].

A good part of the observations made during the interministerial coordination of the concept study is grouped around several problems which may be called of key importance. The most vehement debate was evoked by the possibility of realizing the three versions, including primarily the so-called export-oriented version. I would like to point out briefly that according to the basic KFP [Central Development Program] approved in 1976 the development costs prescribed for the Sixth Five-Year Plan amounted to 25 billion forints at current prices. In technical content, this corresponds essentially to the reduced version with a development requirement of about 30 billion forints. The difference between the two capital demands partly serves the more efficient exploitation of the bauxite fields planned for opening and therewith a significant increase in the volume of bauxite that can be extracted, and partly stems from a faster rate of price increases than had been forecast.

Expansion of Domestic Metal Resources, Establishment of an Aluminum Foundry with a Capacity of 100,000 Tons Per Year.

The basic problem in the further development of the aluminum industry is how considerably to increase the presently known metal resources. This can be solved on one hand by developing domestic aluminum metallurgy and on the other hand by hired

smelting of the alumina in the Soviet Union. Negotiations are underway with the Soviet Union for possible expansion of the agreement and its extension to the period after 1985.

In order to expand domestic metal resources, we must strive to begin in the Sixth Five-Year Plan the implementation of a new aluminum foundry with a capacity of about 100,000 tons per year.

The technical-economic studies related to the establishment of the new foundry are underway, and the questions related to the energy and basic material supply have essentially been clarified.

To support the decision on establishing the investment, there is a way despite narrow financial possibilities for ordering foreign implementation studies and working out studies of investment proposal depth at domestic planning institutes.

In possession of the already available technical-economic materials, the preparatary work must be continued so that the investment can be started as early as possible in the Sixth Five-Year Plan period and the economy may gain the realizable foreign currency as quickly as possible.

The Development of Anticipated Domestic and Export Aluminum Demands

During recent years the processes of our economy have slowed down the rate of growth in aluminum consumption.

In accordance with earlier practice we asked the National Technical Development Committee to survey the anticipated domestic demands for the Sixth Five-Year Plan period.

In the various steps of the vertical, the products of the aluminum industry can be exported in large volume and under favorable conditions to all markets, including capitalist markets. In response to the raw material and energy crisis which has been developing over the past 5 to 7 years, the upswing in aluminum products, which can now be called long term, can be expected to be long in duration and have a favorable effect on the convertible foreign exchange balance of our aluminum industry. These products, as discussed, replace the import of mineral raw materials and energy sources, and thus in respect to the well-known world market changes and acquisition difficulties, they can be favorable placed, particularly in countries with limited domestic resources.

The economic importance of the aluminum industry's central development program is also emphasized by the fact that next to our hydrocarbon and coal resources, bauxite is our national resource on which with a raw material base we can effectively continue to develop our aluminum industry through a significant and economic improvement in the equilibrium of the payments balance which represents the economic problem that must be solved as soon as possible.

Since the aluminum industry, as is well known, is an energy intensive branch, I shall show below some figures to verify how important is the proper satisfaction of energy demands for the successful realization of the above-discussed development concepts.

In our domestic aluminum foundries the specific electric energy consumption is on the average 55.1 GJ/t. With the use of modern, new equipment this can be reduced to 48.0 GJ/t. But even more important is the kind of basic energy sources we use for producing electricity--or in what other way we provide it.

In this study we do not need to take into account the established domestic producer prices but the actual prime costs of the economy in every detail. Considering this, the situation is that the prime cost projected on the calorific value of domestically produced brown coal makes up at present only about 30 to 35 percent of the fuel-oil prime cost stemming from petroleum imported at marginal costs, which is far from capable of countering the power plant efficiency difference. By and large this is the same ratio between the investment costs for developing export capacities to counter imported petroleum and for developing domestic mining. Thus the international competitiveness of our domestic aluminum industry can be assured not merely by reducing the specific energy consumption but also by providing the necessary electrical energy available for the economy in a manner signifying the most important results. At present, and even more intensively in the future, the taking into account of these prime cost figures means the modern power plant based on domestically produced coal and the nuclear power plant with practically the same economic achievement.

Imported oil and its derivatives, therefore must be used in the framework of a structural change in more profitable branches like, for example, the chemical industry, or in places where hydorcarbons can be replaced economically with other sources. It can be ascribed to this that the oil-burning power plant at Szazhalombatta originally designed to be a basic power plant is now operating only as an auxiliary plant for seak load hours.

The Tasks of ALUTERV [Designing Institute for the Aluminum Industry] and FKI [Metal Industry Research Institute] in the Sixth Five-Year Plan

In accordance with the requirements of the new economic policy strategy, the Hungarian aluminum industry in recent years developed a central innovation organization, the Aluminum Industry Research and Planning Institute (ALUTERV-FKI). The situation outlined above defines its so-called "innovation center," research, technical development, planning, primary contracting and other tasks under the Sixth Five-Year Plan.

The most important task in the research area is the coordination and fulfillment of the OKKFT [National Medium Term Research Development Plan] program ("the development of aluminum metallurgy for reducing specific material and energy consumption") including in the field of alumina production the development in modern quality of the so-called sand-type alumina production technology and of aluminum-saving special alloys (celotvozetek); and moreover, the modernization of alumina production technology, the development of quality control methods, and the development of aluminum metallurgy technology and the manufacture of semiprocessed goods (study of the effect of additives, research of lubricants, and so forth).

The most important tasks in the technical development area may be regarded as the following:

--coordination and organization of the MAT technical development activity,

--organization and extension of innovation activity, including besides the domestic adaptation of technical development the results of their foreign marketing,

--development of the necessary basic equipment in the field of alumina manufacture for the planning of modern, large-scale factories;

--implementation of computerized process guidance for alumina factories;

--technical preparation for establishing a 100,000 ton per year capacity foundry, or the reconstruction of existing foundries;

--the working out of more highly finished semiprocessed products, and the development of modern, marketable, and metal-saving aluminum finished products (for example, thermal gap-free closings [hohidmentes nyilaszarok,] Al-vehicle parts and panels),

--assistance to the rapid and effective introduction of licenses that have been purchased or are intended to be purchased,

--the working out of energy-saving, technological solutions in the entire vertical of the industrial branch.

The most important tasks in the field of planning are:

--creation of modern planning conditions which will assure the effective utilization of manpower, the exact observance of deadlines, and plan provisions for investments,

--in planning activity, adaptation of the planning in the variants as a function of the fact that in accordance with the value of the available resources the best solution may be selected,

--in the mining area, the definition of the mining changes appropriate to the best ore resources management, and plan provisions for the necessary mine openings,

--provision of the plans for expansion at Szekesfehervar.

In the area of prime contracting the most important tasks in the coming period are:

--acquisition or manufacture of planned, modern basic equipment,

--completion of new aluminum foundry investments and machinery acquisitions,

--the carrying out of undertakings which emerge in the framework of intellectual exports,

--the completion of investments that affect industrial branch energy rationalization.

The following may be mentioned as other crucial tasks:

--leadership of the CEMA Light Metal Metallurgy Scientific Technical Council, and together with this the effect of broadening the innovation process toward our CEMA partners,

--implementation of the interests of the aluminum industry in domestic and international standardization activity,

--by means of international relations the acceleration of innovation activity, the continuation of an active license policy, and the marketing of the intellectual achievements of the Institute and the industrial branch.

Summary

Our present economic problems require the development of a new economic political strategy. To this end, intensive growth is necessary by taking into account the phenomena, interrelationships and requirement system in the world economic change of era. The Sixth Five-Year Plan also aims at an intensive development to restore the economic equilibrium.

The aluminum industry fully meets the economic requirements of structural modernization and selective industrial development because it is based on a domestic raw material basis and its products can be sold favorably on all markets, with minimum capitalist import requirement.

The implementation of the development of the aluminum industry is assured by the development and good work of ALUTERV-FKI in the innovation organization of the Hungarian Aluminum Industry Trust.

6691
CSO: 2500/224

POLISH ECONOMIC SOCIETY STATES VIEWS ON ECONOMIC REFORM

Warsaw ZYCIE GOSPODARCZE in Polish No 20, 17 May 81 p 8

[Text] The Polish Economic Society has repeatedly expressed its position on the basic guidelines of economic reform announced on December 1, 1980, particularly in pre-Congress discussions and publications, and above all at the National Congress of Economists on March 6-8 of this year. The position taken by the Society's Main Board on April 14, expressed in the accompanying text, is in accord with the Congress' proceedings and resolution, and is an official confirmation of the Society's position on the economic reform guidelines.

General Comments

1. The draft "Guidelines" are vague and too general. This results from the entire vocabulary, the gaps in the text and also the fact that too much is said about the goals and results of reform, and too little about the methods by which it will be achieved. The text's generality and vagueness made it difficult to conduct a public discussion on it, likewise among members of the Society.

2. The gaps and vagueness concern fundamental issues, precisely those that will decide whether we abandon the directive-distribution system: the role of the party organs in managing the economy, the structure of the central administration, the role of traditional directives, the organizational structures in management and how they will be formed, the procedure by which economic organization directors will be appointed and removed.

3. In connection with the above, the entire text is incoherent. Along with demands for sweeping changes in some fields, we have the aforementioned gaps and lack of clarity on the most important points, which, in practice, would make the implementation of these sweeping changes impossible.

In summary, we may say, in accordance with the National Congress of Economists resolution, that the "Guidelines" text does not fulfill the criteria for total and decisive reform.

Detailed Comments

1. The draft lacks concrete formulations on the reconstruction and reduction of the central economic administration. This refers particularly to the branch ministries (point 58) and Planning Committee (point 50). Nor is there any proposal on the role of the Cooperative Unions.

In the absence of drastic changes in this field which would sever the official interdependence between the central administration organs and the management units, a radical reduction in employment in these organs, and their far-reaching integration (including the creation of a single Ministry of Industry as a staff organ), for all practical purposes it will not be possible to change from the present directive-distribution method of central management and, as a result, actual economic reform will be impossible.

2. The draft provides that the traditional directives will be retained. Point 81 states that "comprehensive economic plans will be implemented" by means of "quantitative tasks and allotments of funds." Creating such a "loophole" for directives carries with it the high risk that they will dominate the entire management system. The point cited also is in conflict with point 89, which states that "the only form by which an enterprise may be committed to undertake an economic activity (...) should be an agreement." Next, point 39 talks of administrative funds "assuming the form of agreements" between an enterprise and a state administrative organ, which gives the impression that agreements are to be a secret form of orders.

3. The distribution of responsibility between the central organs and the economic organizations for forming organizational structures in the economy is unclear. On one hand it states that "the formation of organizational structures (plant and equipment) should be within the jurisdiction of the state authorities, and on the other hand, it speaks of the responsibility of enterprises in this field.

Nor do we know why, in certain fields (e.g., coal mining, part of iron and steelmaking, the machinery and chemical industries), there are to be maintained compulsory groups of enterprises, encompassing all or most of the enterprises in a particular industrial subbranch, thus making them monopolistic.

The Main Board believes that outside the sphere of a narrowly conceived economic infrastructure, enterprises should be free to form their own associations assuming they are approved by the state anti-monopoly control organ.

The draft does not clearly define procedures for appointing, and particularly, for dismissing directors of enterprises (point 69). The traditional concept of "a superior organ" has been retained, which suggests that the official subordination of directors to central administrative organs will be retained, thus the bases of the directive-type system will be retained.

The "Guidelines" place a great deal of emphasis on the principles for selecting and the criteria for evaluating management personnel (point 47), but do not give a mechanism and do not define how they relate to enterprise independence and self-government.

These same reservations apply to the proposal for making period evaluations of enterprises (point 70). [No item 4 included]

5. We do not know on what scale, compared to the present, investments will be undertaken. Their share should be greatly reduced in favor of investment by enterprises. Nor is there a clear procedure for making decisions in this matter (point 41).

6. Point 46, on the subject of prices, is exceptionally vague. It does not deal with the main problem: who, and on what scale, will fix prices, and on what will these prices depend. As concerns the above, all of the theses on prices contained in this point, particularly their parametrical character, are in the form of vague stipulations.

7. Far too little emphasis is placed in the draft on elimination of monopolies in the economy. The retention of monopolistic groups (see point 24 on compulsory groups) is stipulated, but the removal of compulsory forms of administrative control exercised by some producers over others (e.g., industrial-subbranch coordination) is not stipulated.

8. The role of local organs in economic management (point 25) is also vague, particularly as to the scale and method by which these organs have the right to officially exert their influence on local enterprises. The authority of the national councils, as it relates to the local administrative organs, must also be greatly expanded and defined. The problem of the distribution of responsibility between the voivodship level and the basic level should also be examined, in view of the excessive centralization now appearing in this field.

9. The economic reform conditions contain elements that can only be ensured entirely or principally by the reform itself, e.g., "raising the level of standardization, improving the technical preparations for production, and introducing organizational innovations in enterprises" (point 17), "guiding the entire economy toward efficient utilization of material resources" (point 18).

10. Considerable additional work must be done on the method of introducing the reforms. The "Guidelines' text does not give the basis for the proposed time schedule for changes of systems. The dangers inherent in the reforms in view of the large imbalance, have not been isolated and no appropriate safeguards have been proposed. Most vague of all is the relationship between reform and the plan for stabilizing the economy--two operations which must be conducted simultaneously and therefore should constitute an organic whole.

We believe that a program for solving the crisis should be a program for accomplishment of reform, supplemented by the current economic policy, subordinated to the balancing of the economy, and accomplished by means of organizational structures and instruments that are in conformance with reform, particularly money-market, and not directive-distribution, instruments.

11. Work on the draft of economic reform should be greatly accelerated and a number of reform activities should be quickly undertaken: eliminate bureaucratization in cooperatives and in all of the small-scale production; increase the authority of the

national councils; reform the organizational structures connected with the directive-distribution method of central management; introduce a new economic-financial system in socialized farming, based on enterprise independence and self-financing; straighten out the foreign-currency exchange rate system, the tariffs, the amortization rates, and the methods for pricing fixed assets; undertake a program of price reconstruction; and eliminate unnecessary or even harmful legal codes, etc.

The organization of work on reform must be greatly improved by entrusting this work to a much smaller group, comprised of people who are independent of organizational structures linked to the directive-distribution system of management.

9295
CSO: 2600/214

GUIDELINES FOR REFORM OF PRODUCER PRICES STATED

Warsaw ZYCIE GOSPODARCZE in Polish No 13, 29 Mar 81 pp 8, 9

[Text] The Committee for Economic Reform submits for public discussion the guidelines for reform of producer prices, prepared by Group 3, dealing with economic systems. Opinions, proposals and suggestions concerning these guidelines should be submitted by April 15th, addressed as follows: Dr Zbigniew Madej, Chairman, Group 3, Committee for Economic Reform, Planning Commission, Plac Trzech Krzyzy 5, 00-507 Warsaw.

Introduction

1. A state pricing policy should be conducted in a socialist economy.

When markets are balanced and there is competition among domestic producers and between producers and import, prices should form freely without direct state intervention. Under such conditions, the state can always act indirectly to affect prices, by determining the amounts of taxes, tariffs, and in warranted cases, it can grant the appropriate subsidies.

The state, however, should control prices on the monopolized market (particularly in specific industrial branches that are organized into concerns) and also when there are long periods of imbalance between supply and demand. In these cases, the appropriate state authorities should either fix prices directly or prescribe binding rules by which they can be calculated.

2. The purpose of the prices should be to equalize supply and demand (taking import and export into account) into specific goods and services and to cover costs of domestic manufacture or importation, and obtain average profitability. Equalizing supply and demand at a price that provides a much higher-than-average profitability is a sign of inadequate supply, which should be increased by expansion of domestic production or by increase of imports.

3. While acknowledging these price-fixing principles to be purposefully correct, we must nevertheless realize the limited possibility of applying them in the next few years. This is due to the serious imbalance both in turnovers of consumer goods as well as in turnovers of producer goods. That is why it is necessary to establish separate rules for setting prices for the next few years, when the conditions described in points 1 and 2 have not yet been fulfilled. It is also

necessary, applying these rules, to conduct a one-time reform of producer prices, using, at the starting point, the ratio and level of these prices to the amounts warranted by the rules set down for their formation.

4. Group 3 considered two variants for producer-goods price-setting, namely:

-- Variant 1, in which the basis for fixing prices on articles imported from both payments areas [capitalist countries and socialist countries] and also on articles of domestic manufacture, will be, insofar as possible, the prices in effect in foreign trade (paid at import or obtained at export) with the second payments area [capitalist countries].

In this variant, prices of most basic raw and other materials are determined on the basis of world market prices, although certain exceptions are made (e.g., in cement). But prices of end products in processing industries are only based on world prices if the products are exported or are directly comparable with similar products appearing in international turnovers. The remaining products will necessarily be priced on the basis of the prime costs of their production. This means that, in reality, this is a mixed variant, with the preponderance of world prices as a starting point in creating producer prices in Poland. The rules for price formation in variant 1 are similar to the system introduced in Hungary in 1980.

-- Variant 2, in which the basis for price formation are the outlays for manufacturing specific items in the country or for purchasing them from import. The sales price of a domestically produced article would correspond to the average industrial-subbranch cost of its production, increased by the accumulation surcharge set for that subbranch. The sales price of an imported article would be derived from the transactional price for a given payments area. In the case of an import from both payments areas, the basis of the sales price would be the average of the transactional prices for both areas.

This means that in a number of cases domestic prices are linked to world prices, although a large majority of the prices could be based on prime costs of production. Thus, this is also a mixed variant, but with the preponderance of prices based on costs.

After much discussion, Group 3 came to the conclusion that pure models cannot be applied and came out in favor of mixed solutions.

5. The problem of the foreign-exchange rate used to convert foreign-exchange zlotys, appearing in foreign-trade turnovers, into domestic prices, was widely discussed in Group 3.

Without reservations, the rule was approved that the foreign-currency exchange rate must express in currency zlotys the cost of obtaining a currency unit in export, but not, e.g., the dollar and currency zloty ratios occurring on intra-country markets which are under the strong influence of the fiscal policies applied in the individual countries and the diversities of the profit margins connected with the structure and organization of the country's trade.

Some differences in opinion occurred, however, concerning the guideline that this is to be an average rate (in turnovers with the second payments area it would be--considering the repercussions of producer-price reforms on the cost of obtaining a currency unit--about 45 zlotys for a dollar). Although most group 3 members were in favor of the average rate, some of them believed that it would be best to base the foreign-currency exchange rate on the submarginal ratio between the value of export in domestic prices and the value of this export in foreign currency, because only then will most export be profitable. On the other hand, application of a submarginal rate (under the cost conditions after price reforms it should amount to approximately 60 zlotys per dollar or even more) would also cause a large increase in the general price level of producer prices. As a result, the costs of manufacturing consumer goods would also increase, and a very large increase in the retail prices of almost all market goods and services would become necessary.

Therefore, the group decided that rather than introduce a submarginal rate, it would be more efficient to automatically grant additional financing from the export budget for those items which would be profitable if the submarginal rate were applied, and to selectively grant additional financing to the exports that exceed this rate.

Variant 1: Prices based broadly on foreign-market prices

A. Prices of basic raw and other materials

6. It is proposed that sales prices of basic raw and other materials, both imported and domestically manufactured, be based as a rule on the level of foreign-trade prices in turnovers with the second payments area. Specifically, it is proposed that:

a. Sales prices of basic raw materials, imported from both payments areas, are to be set at the level of transaction prices paid in imports with the second payments area last year, and in particularly warranted cases, during the last half-year, taking into account the contracts already signed for future deliveries and also considering the differences in the quality of products from different payments areas.

b. In cases where some of processing-industry goods are imported and some are domestic (e.g., hides, wool, cellulose), sales prices of raw materials from domestic production should be fixed at the same amount in effect for imported raw materials, taking into account any differences in quality.

c. Sales prices of domestic raw materials designated for export should be fixed at the level of transaction prices obtained in exporting to the second payments area last year, and in particularly warranted cases, during the last half-year, taking into account contracts already entered into for future deliveries.

d. Sales prices of domestic "exportable" raw materials, i.e., those not currently an object of export but appearing in turnovers on the world market, should be fixed on the basis of a forecast of world prices for these raw materials, formulated from quotations on commodity markets.

7. Sales prices of basic raw materials should be changed when their transaction prices last year, and in particularly warranted cases, during the last six months, deviated from the sales price in effect by at least 10 percent. This method will ensure, on the one hand, relative price stability of basic raw materials, and on the other hand, their relative flexibility. The prices will also be realistic, the absence of which in the past has led to constant distortion of cost accounting in the national economy.

B. Prices of remaining producer goods

8. Other imported producer goods (not included with basic raw materials) should be obtained by domestic buyers just as they are now, at transaction prices. In the case of articles imported from both payments areas, sales prices of articles from the first payments area [socialist countries] should be fixed at an appropriate ratio (taking quality differences into account) to prices of similar items appearing in the second payments area.

9. For products exported to the second payments area, domestic producers should receive, as heretofore, transaction prices. In exporting to the first payments area, producers would receive the prices fixed according to the rules described in points 10-14 (concerning products intended for domestic buyers, taking export priorities into account).

10. In all cases where systematic export of products of a given branch of industry to second payments area countries is involved, it is proposed that sales prices for domestic buyers of products that are the object of this export and domestic turnover, be fixed at the amounts of average transaction prices obtained in this export last year, and in particularly warranted cases, in the last half-year, taking into account prices resulting from contracts entered into for future export. These sales prices should be changed when the average transaction prices in the past year in export deviated by more than 10 percent from the sales prices in effect. Sales prices of remaining products, produced by a branch of industry in which exporting takes place, but which are not objects of export, should be fixed on the basis of costs taking profitability into account, but not exceeding the prices obtained in export transactions.

11. In cases in which domestic production is not sufficient to satisfy the demand of domestic buyers, and thus is supplemented by imports from the first or second payments area, it is proposed that sales prices of domestically manufactured products be fixed at the level of average transaction prices paid in importation from the second payments area, taking possible differences in quality into account.

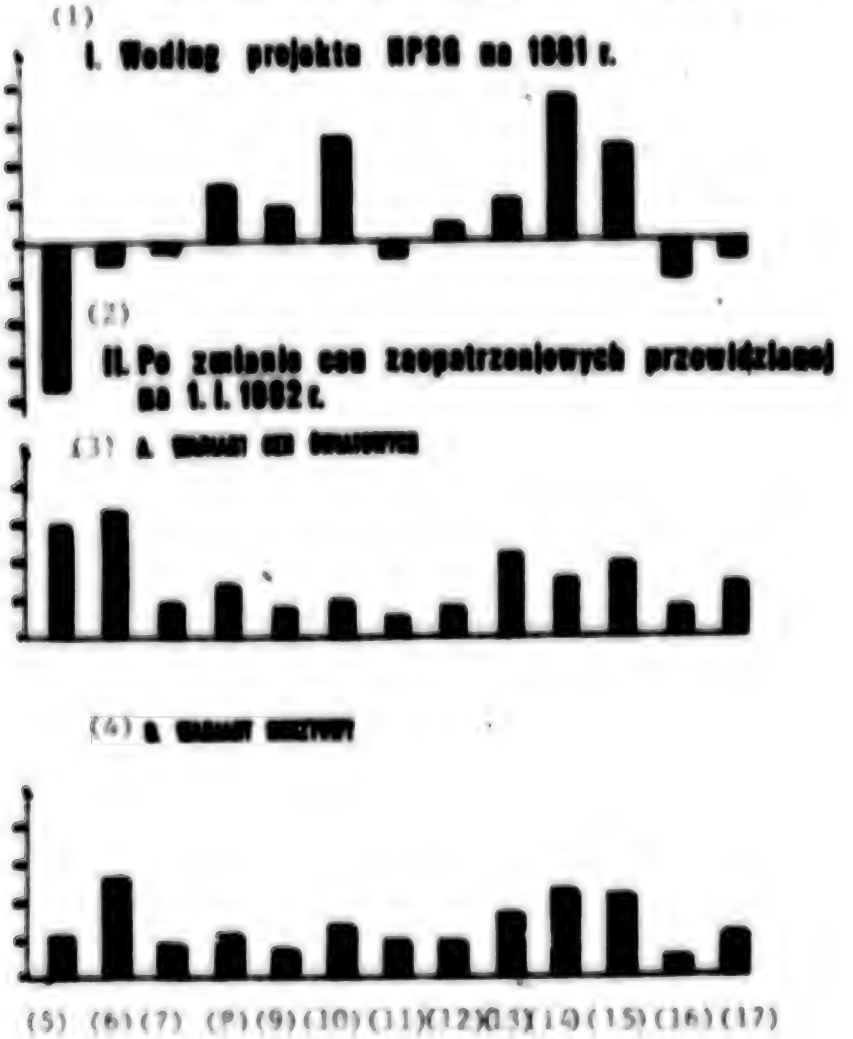
12. In cases where conditions are lacking by which sales prices on producer goods manufactured by processing industries can be established on the basis of foreign-market prices, it is necessary to adhere to the rules for establishing sales prices on the basis of production costs, taking accumulation surcharges into account. The surcharge rate should be set by the State Price Commission in conjunction with the Ministry of Finance, according to uniform rules on the desired range of self-financing.

In establishing product sales prices on the basis of production costs, preference must be allowed for quality of production (an appropriate increase in prices for products of recognized quality, price differentiation according to grade).

13. Price-setting rules should be applied as broadly as possible in establishing sales prices for newly produced machinery and equipment on the basis of comparing their functional utility (technical parameters) with machinery and equipment produced heretofore. This refers to cases where due to lack of similar machines either in exports or imports, it is not possible to base sales prices on foreign trade prices.

14. To establish sales prices on the basis of production costs, the mechanism for changing them (upwards or downwards) must be anticipated, in case there are changes in costs which are independent of the producer (e.g., large changes in cost of raw materials). It may be determined that a changes in sales price will take place when changes in costs caused by factors independent of the producer will cause a deviation of more than 5-10 percent of the total costs, as compared to that which constituted the basis for establishing the sales price that is in effect.

Formation of Profitability in Basic Economic-Type Ministries



Key:

1. According to NPSG [National Socio-economic Plan] draft for 1981
2. After change in producer prices planned for January 1, 1982
3. World-prices variant
4. Costs variant
5. Mining
6. Power
7. Metallurgy
8. Machinery
9. Heavy and agricultural machines
10. Chemicals industry
11. Construction and construction materials
12. Transportation
13. Forestry and timber
14. Light industry
15. Food industry and purchases
16. (illegible on copy)
17. (illegible on copy)

Variant 2: Prices based on costs

A. Prices of basic raw and other materials

15. It is proposed that the level and ratio of sales prices of basic raw and other materials be determined in such a way that they will correctly reflect the outlays for their domestic manufacture or their purchase by importation.

16. The basis for establishing sales prices for domestically produced raw materials should be the average planned production cost increased by the financial accumulation surcharge, mentioned in point 12.

17. It is proposed that sales prices of imported raw materials be established as follows:

a) for imports from the first payments area--at the level of transaction prices planned for a given year,

b) for imports from the second payments area--at the level of transaction prices paid last year, and in particularly warranted cases, in the last half-year, taking into account contracts already entered into for future deliveries,

c) for raw materials imported from both payments areas--at a level of the average transaction prices (taking quality differences into account) determined in accordance with the rules contained in a and b above.

18. In cases where the raw material is domestically produced, and its importation is only supplementary, its sales price may be established:

a) at the level of a sales price of a domestically produced product, if its importation is only temporary and its share in domestic-buyer goods is small,

b) as the average of domestic sales prices and transaction prices paid at importation, if the supplementary importation is of a permanent nature and forms a large share in domestic-buyer goods.

19. For domestically produced raw materials, mostly exported, domestic sales prices may be, as theretofore, established at the level of world prices (this method has been applied for over 20 years in relation to nonferrous metals).

B. Prices of remaining production goods

20. For other imported producer goods (not included with basic raw materials), it is proposed that transaction prices be applied, as heretofore.

21. For products sold for export, domestic producers should receive, just as heretofore, transaction prices.

22. It is proposed that sales prices of producer goods manufactured by the domestic processing industry be fixed at the level of production costs, adding on an accumulation surcharge determined according to the rule formulated in point 12. It is also proposed that the rules described in points 13 and 14 be applied in fixing these prices.

Results of both variants

23. In calculating the sales price growth indicators (shown in Table 1) by world market prices (second payments area) a conversion factor of 45 zlotys for one dollar was used as well as average prices paid in import or obtained in export in 1980, taking into account in some cases also the forecasts for 1981 on the basis of signed contracts.

In variant 1, the proposed price increases in items 1, 3-5, 7-9 and 11-20 are based on the world market price level; however, in the remaining items, they are based on production costs, revised due to the assumed increase in sales prices for starting raw materials, energy and transport tariffs, as well as the increase in prices of end products, which was the result of those changes. The increase in charges for thermal and electrical energy were assumed to be higher than would appear from the increase in production costs, in order not to lower the ratio of these charges to the prices of various energy carriers (coal, gas fuel). The scale and financial effects (sales value increase) of the price changes in some basic raw and other materials and also power and transport tariffs, are shown in Table 1.

It is anticipated that changes in prices of raw and other materials, energy and transport services will also make it necessary to change the prices of the investment-good end products.

The total financial results of variant 1 are estimated at approximately 2.1 billion zlotys, and variant 2 at approximately 1.4 billion zlotys.

25. To illustrate how the producer-goods price change indicators are derived in variants 1 and 2 and the effect of price changes on production profitability in variant 2, we cite, as an example the following data on hard coal.

a. In 1980 the prime cost of hard coal was about 800 zlotys per ton. The average annual coal-extraction unit costs increased 9 percent during 1976-1980. In 1981, in connection with the fundamental change in working conditions and wages in coal mining, it is expected that the prime cost of coal will be 942 zlotys per ton, which shows a higher cost growth rate (by 17.8 percent). A slowing-down of the growth trend in the unit cost of coal is proposed for 1982, even in relation to the yearly average for 1976-1980. It was envisaged that the units cost of coal in 1982 will be 1,000 zlotys per ton (a 6.2 percent increase over 1981).

It is estimated that the effect of changes in prices of raw and other materials, energy, transport, construction-assembly work and end products in the processing industries, on the prime cost of coal, in the case of variant 2, will be 137 zlotys per ton.

Total prime cost of hard coal under 1982 cost and price conditions will, therefore, in the case of variant 2, be 1,137 zlotys per ton.

The average sales price of hard coal is now 467 zlotys per ton. Thus, in the case of variant 2, the price will increase by 794 zlotys per ton (170 percent).

New price of coal	1,262 zlotys per ton	
Prime cost	1,137 zlotys per ton	
Profitability	125 zlotys per ton	(i.e., 11 percent in relation to prime costs).

Table 1

(1) Wyszczególnienie	(2) Wg wariantu I		(3) Wg wariantu II	
	(4) wzrost cen w proc.	(5) skutki w mld zł	(4) wzrost cen w proc.	(5) skutki w mld zł
(6) Produkty przetwórstwa ropy	303	271,3	78	103,3
(7) Węgiel kamienny	355	227,7	170	154,8
(8) Koks	275	67,0	180	44,6
(9) Węgiel brunatny	250	12,3	170	8,3
(10) Surowce hutnicze	90	32,5	80	28,9
(11) Wyroby hutnictwa żelaza	130	215,5	110	100,8
(12) Drewno i tarcica	180	26,3	130	26,3
(13) Cement	185	24,3	130	20,4
(14) Celuloza i papier	128	32,7	80	20,4
(15) Bawełna	70	5,8	30	2,5
(16) Kauczuki i lateksy	120	8,7	100	7,3
(17) Surowce fosforonośne	360	8,4	360	8,4
(18) Miedź	50	8,4	50	8,4
(19) Aluminium	160	6,7	160	6,7
(20) Cyna	175	2,0	175	2,0
(21) Ołów	75	1,5	75	1,5
(22) Siarka	180	11,1	110	6,1
(23) Ziarno kakaowe	100	2,3	100	2,3
(24) Energia cieplna	200	22,8	160	18,0
(25) Materiały budowlane	85	80,1	75	54,5
(26) Artykuły chemiczne	50	116,8	25	58,3
(27) Inne artykuły przemysłowe	30	132,7	15	90,5

Key:

1. Item
2. Variant 1
3. Variant 2
4. Price increase in percentage
5. Results in billions of zlotys
6. Petroleum products
7. Hard coal
8. Coke
9. Brown coal
10. Metallurgical raw materials
11. Iron products
12. Lumber and timber
13. Cement
14. Cellulose and paper
15. Cotton
16. Rubber and latex
17. Phosphor-bearing raw materials
18. Copper
19. Aluminum
20. Zinc
21. Lead
22. Sulfur
23. Cocoa beans
24. Thermal energy
25. Building materials
26. Chemical products
27. Other industrial products

In the case of variant 1, the indicator for the increase in the price of hard coal has been determined as follows: the starting point was the average foreign-exchange price of coal in export to the second payments area in 1980, revised on the basis of already-concluded contracts for 1981. The revised price is 47.2 dollars per ton. Assuming the foreign-currency exchange rate to be 45 zlotys per dollar, the price of coal is 2,124 zlotys per ton.

This price is higher than the present average sales price of coal exported to the second payments area, 602 zlotys per ton. The difference is 1,522 zlotys per ton. The sales price for coal exported to the second payments area would increase by about 250 percent. This indicator can be used in increasing the entire level of coal prices, since present price ratios correctly express, as a rule, differences in quality. The sales price of coal in Poland would then be about 1,635 zlotys per ton.

Examples illustrating changes in sales prices of some producer products, as a result of price reforms, are shown in Table 2.

Table 2.

Product	Current price	Price after change: According to variant 1	Price after change: According to variant 2
Stoker lump coal	685 zl/t*	3,520 zl/t	1,850 zl/t
Stoker pulverized coal	538 zl/t*	1,450 zl/t	1,450 zl/t
Iron products			
-- Gr. 1/3 steel thick sections	5,793 zl/t	13,872 zl/t	9,850 zl/t
-- Gr. IV steel wire rod	6,851 zl/t	14,342 zl/t	13,018 zl/t
Gr. II edged coniferous lumber	3,000 zl/m^3	8,000 zl/m^3	4,000 zl/m^3
Lump sulfur	1,633 zl/t	4,060 zl/t	2,620 zl/t

*Coal prices shown in this table apply to specific grades of coal (intended mainly for export) which is why they are higher than the average current price of 467 zl/t.

Advantages and disadvantages of both variants

26. Arguments in favor of variant 1 are as follows:

a. Setting prices of domestically produced raw materials at the price level of these raw materials in foreign trade (in export) makes it possible to correctly evaluate the producing efficiency of the processing industries. It also makes it possible to determine what is more profitable: to export raw materials in an unprocessed state or to process them and export the products made from the materials.

b. Fixing domestic sales prices of raw materials, and principally the prices of products from the processing industries, creates pressure to apply production efficiency to world market requirements, for only this will ensure that the indispensable profitability will be obtained. Price becomes an external parameter for the producer, which he cannot manipulate but to which he must conform.

c. At the same time there is a strong incentive for obtaining the highest possible prices in export, since they set a level of profitability for all production, including that intended for domestic purchasers.

27. The basic disadvantage of the system outlined in variant 1 is that it transfers the entire supply-demand system of the world market, together with the inflationary trends reflected in the foreign-exchange prices of the second payments area, into a system of domestic producer prices, and, in consequence, into production costs, including, also, market products. Along with the creation of a system of producer goods prices on the basis of transaction prices affecting only the second payments area, there is a further defect in the system formulated in variant 1, i.e., adopting prices from the second payments area also for basic raw and other materials imported from the first payments area, does not correspond with the costs of obtaining these raw and other materials from the first payments area.

28. Group 3 believes that the above-described negative consequences, particularly those indicated in point 27, could largely be avoided if the rule for basing domestic prices on transaction prices used in turnovers with the second payments area were not applied to an extreme degree. It would then be possible to take, in the case of a large share of turnovers of a given product in turnovers with the second payments area, average prices calculated on the basis of transaction prices of both areas, taking both foreign-currency exchange rates into account (separately for each area). In the case, however, where the turnover of a given article affects only the first area, only the foreign-currency exchange rate for the first area would be used.

29. An argument in favor of variant 2 is that in reality it is a continuation of the presently applied concept of creating a system of prices in the producer goods sphere, using domestic production or import prices. This concept has a certain tradition and conforms to present habits and widely held viewpoints.

30. Against variant 2 is the fact that prices established according to the cost concept as a rule sanction every level of costs (even when the basis used for fixing prices is the average industrial-subbranch cost). These prices do not fulfill an active role in improving production efficiency, do not stimulate cost reduction and better utilization of production factors.

The rules for establishing prices in the producer goods sphere, as outlined in variant 2, are more applicable to a centralistic economic system. To apply them efficiently, not only must good standardization become universal, but distribution must be constantly maintained.

31. After discussing and comparing the advantages and disadvantages of both variants, Group 3 favors acceptance of variant 1, but eliminates the use of extreme solutions since they lead to undesirable price ratios. With this correction, variant 1 is, in reality, a mixed variant.

Repercussion of producer price reforms on retail price levels

32. The increase in sales prices of basic raw and other materials and other producer goods, as well as charges for power and transports of goods, will affect the costs and profitability of not only investment and producer articles but also market products and social services. There will be an increase in costs of producing articles for the market*, reducing the amount of the present accumulation or increasing the range of products requiring subsidies from the state budget. The examples given in Table 3 illustrate this.

33. In addition to the above-described effect of producer price changes on production costs of market articles, attention should also be given to another kind of linkage

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* It is estimated that the increase in production costs of market products due to reforms in sales prices will be as follows: with variant 1, about 240-360 billion zlotys; with variant 2, about 160-250 billion zlotys. This does not mean, however, that the entire price increase must be reflected in an increase in retail prices. It would be partly covered by the decrease in the producers' financial accumulation. This would affect about 25 percent of the results cited above for variant 1 and about 30 percent for variant 2.

Table 3.

(1) Wyszczególnienie	(2) Rentowność brutto w proc.[1]			(5) Procentowe podwyżki cen detalicznych niezbędne dla zapewnienia rentowności produkcji	
	(3) obecna (1979)	(4) po uwzględnieniu skutków reformy cen zbytu			
		(6) wariant I	(7) wariant II	(6) według wariantu I	(7) według wariantu II
(8) Pralki wirnikowe i wirówki	—31,3	—44	—36	89	66
(9) Automaty pralnicze domowe	23,0	—20	—1	33	7
(10) Chłodziarki i zamrażarki	29,2	—12	1	22	5
(11) Rowery	12,9	—25	—12	41	20
(12) Porcelit stołowy i galanteria porcelanowa	—14,4	—29	—24	49	39
(13) Meble	25,8	—13	6	22	—
(14) Wyroby przemysłu papierniczego	10,6	—71	—39	266	49
(15) Naczynia kuchenne aluminiowe	15,0	—40	—21	77	34
(16) Ciągniki kołowe dwuosiowe	9,5	—35	—19	63	31
(17) Części zamienne do maszyn rolniczych	27,5	—24	—8	39	12
(18) Telewizor c/b „Antares 20"	11,0	—0	—3	17	8

Explanation: 1) Gross profitability represents the ratio between financial accumulation (profit plus turnover minus tax subsidy) and sales prime cost. 2) Gross profitability marked "--" represents the ratio of loss to sales prime cost and shows that it is necessary to raise retail prices to obtain profitable production.

Key:

1. Item
2. Gross profitability (in percent)
3. Present (1979)
4. After taking sales price reform results into account
5. Percentage of retail price increase indispensable to ensure profitability of production
6. Variant 1
7. Variant 2
8. Rotary washers and dryers
9. Automatic home washers
10. Refrigerators and freezers
11. Bicycles
12. Semi-vitreous chinaware and porcelain ornamentals
13. Furniture
14. Paper products
15. Aluminum kitchenware
16. Two-axle wheel tractors
17. Farm machinery spare parts
18. "Antares 20" television sets

between producer-goods sales prices and retail prices of market products. Thus, among the raw and other materials encompassed by the intended reform of sales prices, are also some market products intended for sale to the public, e.g., coal, coke, cement, bricks and other building materials. thermal and electrical energy, and gas. An increase in the sales prices of these raw and other materials will mean that the sales prices will be higher than the retail prices. To maintain profitable market sales of these materials, it will be necessary to increase their retail prices. The financial effects of such an action, burdening the individual buyers,

is estimated at about 130 billion zlotys according to variant 1, and about 85 billion zlotys according to variant 2. If retail prices are not increased, the market sales of these raw and other materials will have to be subsidized by the appropriate amounts.

There is also a group of products that are almost exclusively objects of producer turnover and become part of market turnovers to only a small degree (mainly such materials as those supplied to the crafts). In view of the sporadic nature of the market sales of these products (sheet metal, pipes, other metalworking products), they do not have separate retail prices but only prices created from sales prices, increased by interest surcharges and profit margins. If the rise in retail prices in this sector is to be counteracted, it will be necessary to maintain the present producer goods price lists for market turnover needs, or correspondingly revise the amounts of the conversion factors and profit margins that are applied. In both cases, it would be necessary to grant budget subsidies (negative budget results) on market sales of these products. The scale of indispensable subsidization is estimated at approximately 7 billion zlotys under variant 1 of the price reforms, and 5 billion zlotys under variant 2.

34. From the standpoint of coherence and logic in a price system in Poland, in which retail prices should correspond to sales prices, it would be proper to transfer the results of producer price reforms to the retail price system across the board. Cost estimates are shown in Table 4.

Table 4.

Item	Variant 1	Variant 2
1) Increase in costs of market items attributed to changes in producer prices	180-270 billion zlotys	112-175 billion zlotys
2) Compensating two-level prices (sales prices and retail prices) in articles sold to the socialized economy and to the people	130 billion zlotys	85 billion zlotys
3) Compensating the increase in retail prices put into effect directly from producer sales prices	7 billion zlotys	5 billion zlotys
Total	317-407 billion zlotys	202-265 billion zlotys

These calculations do not take into account the effect of possible price changes in the food complex (see point 36).

35. It should be emphasized that it is still possible to separate the producer-price changes from the retail price movement, both in terms of the time necessary to make changes and in the scope of the changes. The producer price reforms are expected to go into effect beginning January 1, 1982 at the earliest.

The time, scope and extent of retail price changes should be decided mainly by sociopolitical considerations, which in the field of retail prices take precedence over economic ones. But if sociopolitical considerations permitted an increase in retail prices before the producer price reforms went into effect, or concurrently, then it would be necessary to take into account the anticipated results of producer price reforms in setting retail prices.

36. Both price reform variants presented here ignore the problem of producer sales prices of farming raw materials in the food industries. This, however, does not make the concept of producer price changes defective.

The sales prices of farming raw materials are derived from the retail food prices in effect, taking into account their production costs and trade profit margins. Changes in producer prices in this field must be prepared separately, together with all the problems involved in setting prices of retail foods.

Organization of work in producer price reforms and a pricing system after reforms

37. Producer price reforms can be conducted according to two timetables, the first of which, based on having all the reforms go into effect on January 1, 1982, has the advantage that it forms the initial basis for introducing other elements of economic reform as early as 1982. However, it is very mobilizing and requires strengthening of the pricing sections working on price reforms in the State Price Price Commission and other branch ministries. If this timetable were to be accepted, it would be necessary to present the appropriate cadre proposals as quickly as possible.

In proceeding according to the first timetable, allowance must be made for a large number of errors in setting prices on processing industry products. The sections preparing the price lists for these products will have very inaccurate information on new prices of fuels, energy, and raw and other materials.

Because all price lists will be prepared simultaneously, work on price lists for subassemblies, assemblies and co-producer products will be based on collective indicators of prices of fuels, energy, and raw and other materials, established in the government's resolution on price changes in producer and investment products.

According to the second timetable, only sales price changes in basic raw materials, fuel and power would become effective on January 1, 1982. Sales prices of remaining producer products, including end products, would go into effect a year later, i.e., January 1, 1983. As a result, it would be necessary to compensate, from the budget, the processing industries for their losses resulting from the growth in costs due to the January 1, 1982 price changes, and for the temporary retention of unchanged sales prices.

38. A comparison of both timetables is made in Table 5.

39. Putting the price reforms into effect will require preparation and publication of price lists in the quantities shown in Table 6.

40. During the next years, when balanced conditions will not be fully ensured, it must be expected that prices will have to be established by directive on a relatively broad scale.

Table 5.

Price reform work schedule	Timetable I	Timetable I
1) Preparing guidelines for reform, establishing the scope of price changes for fuel and energy, submitting to the government for approval	2/28/81	2/28/81
2) Preparing and approving price lists for fuel and energy and raw and other materials	5/31/81	5/31/81
3) Publishing price lists for fuel and energy and raw and other materials	7/31/81*	7/31/81
4) Putting fuel and energy price lists into effect	7/31/81*	1/1/82
5) Preparing and approving price lists for subassemblies, assemblies and co-produced products	7/31/81*	12/31/81
6) Preparing and approving price lists for end products	7/31/81*	4/30/82
7) Publishing price lists	11/30/81	8/31/82
8) Putting price lists into effect	1/1/82	1/1/82

*Insofar as building-assembly work is concerned, at the earlier date (I), it is possible to determine the conversion indicators only for prices that have long been obsolete (put into effect in 1971). Preparation of correct price lists may take place by December 31, 1982, at the earliest.

Table 6.

Item	Number of price lists	Number of pages	Number of copies
Fuel and energy	7	15	100,000
Remaining raw and other materials	52	360	900,000
Subassemblies, assemblies and co-produced products	45	460	500,000
End products	76	720	1,350,000
Total	180	7,755	2,850,000

The state price policy will take two forms:

1) direct price fixing by the State Price Commission,

2) price fixing by management units according to calculation rules determined by the State Price Commission.

2.1. In those cases in which balance is ensured, as well as competition among various producers, free price negotiation between seller and buyer should be permitted (this refers mainly to co-production and non-typical production).

42. Control of prices should be strengthened, conducted both by the State Price Commission and by other organs of state control, and also by various social control organs.

43. Those units whose task it is to set prices and control them, must be reinforced quantitatively and qualitatively. This refers both to the central pricing institution and its local units, as well as to the price cells in enterprises.

44. In view of the urgency of the tasks, particularly if the first timetable is accepted, an additional 8 to 10 million zlotys must be appropriated from the budget to do the work involved with preparing new price lists.

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45. In the case of acceptance of either of the variants, it is proposed that these guidelines be sent through the Committee for Economic Reform to the chairman of the State Price Commission with a recommendation to begin work in accordance with the schedule proposed above.

46. The chairman of the State Price Commission will submit to the Committee for Economic Reform information on the status of work on producer price reforms in the fourth quarter of 1981.

9295
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'LUMEA' PUBLISHES INTERVIEW WITH SECRETARY BALDRIGE

Bucharest LUMEA in Romanian 21 May 81 p 4

[Interview with Malcolm Baldrige, U.S. secretary of commerce: "Romanian-American Economic Relations--'New Opportunities for Development'"]

[Text] The seventh session of the Romanian-American joint economic commission took place last week in Bucharest. Malcolm Baldrige, the U.S. secretary of commerce, the chairman of the American side on the commission, was in Bucharest on this occasion.

The guest was received by Comrade Nicolae Ceausescu, president of the Socialist Republic of Romania, and, during the meeting, it was pointed out with satisfaction that relations of friendship and collaboration between Romania and the United States are experiencing an ascending development in the spirit of and on the basis of the agreements and guidelines decided upon on the occasion of the Romanian-American high level dialogue. The good results obtained in the domain of economic cooperation were stressed and the common desire to utilize as fully as possible existing favorable conditions and to find new ways and means for the development of relations for mutually advantageous cooperation was expressed.

At the conclusion of the session, an agreement was signed, noting the progress made since the preceding session in developing economic, industrial and technical cooperation, in the fields of energy, electronics and geophysics, as well as projects in process of negotiation in the area of machine building, and in the mining, electronics, chemical and pharmaceutical industries. Also, contracts and agreements were signed for economic and commercial collaboration in the fields of energetics, machine building, light industry and other sectors.

Before he left Romania, Mr Malcolm Baldrige was kind enough to respond to some questions from our collaborators Doina Caramzulescu and Marius Ralian.

"I had the great pleasure and honor," the guest said, at the very beginning, "to have a conversation with President Nicolae Ceausescu. We discussed a whole series of issues which affect both the area of trade and international relations. I conveyed to President Ceausescu the personal greetings of President Reagan together with the desire that our relations should be extended in the future, along the lines of their development up to the present; I am convinced that the meeting marked a very important contribution to the development of these

relations. I am extremely happy that I will be able to bring back with me the results of our discussions so I can transmit them to President Reagan.

"In regard to the activity of the Romanian-American joint commission, I signed an agreement and this was the result of 2 days of very intense work. We had a number of problems to solve as was normal but, we have many more opportunities than problems facing us. We can resolve the problems and, as for the opportunities, we have only to develop them and utilize them so that, at our next meeting next year, we will be able to see a greater development of Romanian-American trade relations, along the lines of their ascending development up to the present."

Continuing, Mr Malcolm Baldrige referred to the most favored nation clause. Having in mind the importance of this clause in Romanian-American trade, the U.S. secretary of commerce expressed the position of the administration regarding the necessity to take action for its consolidation in trade relations between the two states. In this sense, he expressed his opinion in favor of granting the clause for longer than 1 year, as is the present case. "We promise our friends in Romania that, in the United States, we will do everything in our power to achieve this goal."

[Interviewers] Mr Malcolm Baldrige, how do you evaluate the development of relations between our two countries in recent years, on multiple planes?

[Baldrige] Our bilateral relations have been developed in recent years, much more than anyone could have hoped. Trade has been registering a constantly ascending development and this expresses, implicitly, the increasing interest of Americans in Romania. At the same time, we have developed the foundation of our relations of friendship and the number of visits made by governmental missions in both directions is increasing. The better people get to know each other, the better it is for relations between our countries. I do not see any reason why we will not be developing our trade relations, in the future, too, at just as steady a pace. As far as I am concerned, I have the best hopes for the extension of these relations at a more constant pace than heretofore.

CSO: 2700/243

PLANNED CONTRIBUTION OF NON-CONVENTIONAL ENERGY SOURCES 1980-2000

Bucharest ENERGETICA in Romanian No 1, Jan 81 pp 1-13

[Paper presented at the ICEMENERG Technical-Scientific Meeting "Contributions to the Development of Romania's Energy Resources," on 26-28 June 1980, by Marius M. Dancila, Constantin Popescu, and Alexandru Mahaila, senior scientific researchers at ICEMENERG-Bucharest, Department of General and Industrial Energy and New Sources of Energy]

[Text] The purpose for a forecast of the development of electric power and heat production from alternative, renewable, and practically inexhaustible sources of energy, is to establish the strategic programs for technologic development and for introduction of technical progress, necessary for the implementation and proliferation of these technologies. Although the financial efforts--from an investment standpoint--are considerable, the systems for converting alternative resources have the advantage of processing constantly renewable resources.

A number of natural restrictions intervene in the technico-economic competition among various technologies for converting primary energy into electricity and heat, such as the limited nature of some of the resources, as well as their circumstantial nature, as in the case of the gradually limited access to suppliers of hydrocarbons and energy-producing raw materials in general. These constraints have a number of consequences on the importance of various categories of resources in the production of the electricity and heat needed by society for its economic development.

The proportion of the major technologies for producing electric power and heat at various stages of the forecast under consideration here, will thus be deter ined by the saturation or exhaustion of the resource being analyzed. The consequence of this evolution--absolutely normal on a historical scale--is the structuring of efforts and the encouragement of activities for introducing at sustained rates and with large financial efforts, alternative technologies for producing electric power and heat so as to meet domestic demand.

In the context of saturation and even exhaustion of the potential for producing electric power and heat through the conversion of the major conventional, traditional resources, the predictable alternatives for the period in question are of course nuclear sources, new sources (primarily sun and wind), and thermonuclear technologies.

1. Energy Potential of Unconventional Sources in Romania

The potential contribution of new sources, and particularly of those that are considered as inexhaustible, in the balance of primary energy, depends on:

The characteristics of the resource;

The rate of technical progress in the specific technologies used to exploit it (many of which are still at their incipient stage of experimental research);

The success obtained in solving fundamental research problems (such as long term heat storage under economical conditions);

Developments in the conventional fuel market;

The rate of industrial-scale penetration of exploitation technologies (a rate which is determined by all the conditions listed above).

For the major unconventional energy resource--solar energy with all its direct (heat) and indirect (hydraulic energy: the so-called natural cycle of water, wind power, wave power, and the energy stored through natural photosynthesis processes) manifestations--the estimates of its potential contribution depend essentially on the geographic conditions of the country, the land areas available for energy utilization, and so on, conditions which obviously impose restrictions on the amount of sun energy that can be economically converted into forms of useful energy.

The energy potential of geothermal resources--considered as belonging in the category of renewable (but exhaustible on a historical scale) resources--is established on the basis of geologic studies. For this type of resource it is estimated that the economically exploitable potential is close to the technically exploitable one (for shallow and intermediate drilling depths). The problems that arise in this case are associated with the location of suitable consumers in areas with geothermal resources, the solution of problems resulting from local characteristics of the source, and so on.

A number of other resources--such as biogas obtained in animal raising, the food industry, sewage treatment, and household wastes, and the low temperature heat recoverable with heat pumps--are usually included among new sources because of the often unconventional nature of the technologies used for their recovery. The energy potentials of these resources are estimated by considering such factors as economic growth and industrial structure, urbanization and demographic policy, the population's life styles, the development of the agricultural sector, growth of animal herds, and so on.

We must however point out that the data on the potentials of new sources of energy can only be taken as estimates at the present level of knowledge of technical methods of utilization. Insofar as these concepts change rapidly with time as utilization technologies evolve, the data presented here will have to reviewed periodically, as will any energy forecast based on it.

Table 1. Distribution of the total solar radiation on earth, according to [1].

Component	Proportion	Comments
Direct reflection	34.1	Energy reflected directly by the atmosphere, dry land, seas, and oceans (short wave radiation)
Energy absorbed and converted directly into heat (intercepted at the earth's surface; direct and diffuse radiation)	41.6	As the temperature of absorbing bodies rises, they emit long wave radiation thus establishing their thermal equilibrium
Energy absorbed in the natural water cycle (evaporation, precipitation, and so on; indirect form of manifestation of solar energy)	21.9	Creates hydraulic phenomena as a whole
Absorbed energy leading to wind and wave formation (indirect form of manifestation of solar energy)	2.15	Absorbtion in the atmosphere; produces temperature and humidity gradients between zones. Waves are created by wind action
Of which: wind energy	2.0	
wave energy	0.15	
Energy absorbed in natural photosynthesis processes (indirect form of manifestation of solar energy)	0.25	Stored in the natural vegetal biomass
Total	100.00 %	

Table 2. Theoretical potential of the solar resource, worldwide and for Romania.

Component	Worldwide $x10^7$ mill. tcc/year	Romania $x10^3$ mill. tcc/year
Direct reflection	6.671	31.06
Energy absorbed and converted directly into heat	8.156	37.98
Energy absorbed into the natural water cycle	4.294	19.99
Wind energy	0.398	1.853
Wave energy	0.0317	0.147
Energy absorbed in natural photosynthesis processes	0.0429	0.199
Total	19.59	91.23

1.1 Theoretical Potential of Solar Resources in Romania

Solar energy is a scattered and intermitent energy flow. Daily, seasonal, and local climate variations raise difficult problems for large scale valorification with adequate economy and reliability. The instantaneous, direct, and diffuse flow of solar radiation received at ground level can be converted through proper technologies into other forms of energy: low and high temperature heat, electric power, synthetic fuels for various processes controlled by biophotosynthesis, and so on, all of these forms being direct manifestations of solar energy. The indirect forms of manifestation (hydraulic, wind, and wave energy) can also be converted into other forms of useful power.

In the case of solar energy, the theoretic potential is taken as the total radiation energy falling on earth (or on the territory of a country or zone), which is the source of all climate, biologic, and ecologic phenomena--in the sense of maintaining the thermal equilibrium necessary to assure normal life conditions. The technically installable potential of the resource--a fraction of the theoretic potential--indicates the actual capability for concrete conversion of solar energy into other forms of useful power.

The calculation of the total solar radiation intercepted by our country is based on data supplied by [1] on the total solar energy received on earth during one year, as well as its distribution among various components. The report of the Commission for Energy Conservation of the World Energy Conference, estimates that the total annual flow of solar radiation is distributed as shown in table 1.

In what follows, we will assume that the distribution indicated in table 1, established on the basis of data averaged over the surface of the earth, remains valid for Romania's territory as well. In this respect, table 2 presents estimates for theoretical potentials for the world and for our country, in absolute values, calculated on the basis of each component's proportion as indicated in table 1.

The calculation of the theoretical solar potential takes into consideration the following assumptions:

a) The value of the total solar radiation outside the earth's atmosphere (solar constant) is 1353 ± 1.5 W/m^2 [2] (falling on a surface normal to the direction of the radiation);

b) Since our country is located at an average latitude of 45^o, the value of the incident flow must be reduced by cos 45^o = 0.707, considering the incident beam of solar radiation as plane parallel. The ±23^o precession of the earth's axis of rotation in the orbital plane is averaged over the course of one year;

c) An average day of 12 hours. The effective annual duration of sunshine is therefore 4380 hours;

d) Since the angle of incidence of the radiation varies from 0^o to 180^o (sunrise to sunset), the radiation flow must be modified by a coefficient of 0.707 in order to average the angle of incidence over the duration of one day.

It consequently follows that the total sun radiation in Romania's zone during a one year period will be:

$$q = 1.353 \left[\frac{kW}{m^2}\right] \cdot 4380 \left[\frac{ore}{an}\right] \cdot 0{,}707^2 = 2963{,}07 \left[\frac{kWh}{m^2 \cdot an}\right] \quad (1)$$

or

$$q = \frac{2963{,}07 \left[\frac{kWh}{m^2 \cdot an}\right] \cdot 800 \left[\frac{kcal}{kWh}\right]}{7000 \left[\frac{kcal}{kg\ c.c.}\right]} = 364{,}03 \left[\frac{kg\ c.c.}{m^2 \cdot an}\right]^{*)} \quad (2)$$

where ore = hours; an = year; and c.c. = conventional fuel.

At the limit of the atmosphere, and for Romania's area, the total incident energy equals:

$$q_{tot} = 364{,}03 \left[\frac{kg\ c.c.}{m^2 \cdot an}\right] \cdot 237\,500\ [km^2] = 86{,}457 \cdot 10^3 \text{ mil. t c.c./an} \quad (3)$$

Since 34.1 percent of this amount is lost through radiation in space, and thus does not contribute to earth processes, the specific theoretical potential of the solar resource in our country's zone is:

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*) In order to verify the figures obtained from this calculation, we have used q = 364.03 kg c.c./m^2 year, which in the case of direct solar energy converted into heat (41.6 percent of the total according to table 1), with an average annual conversion yield of 35 percent for the experimental solar collectors of ICCPDC-INCERC and INCREST (Central Institute for Construction Research, Design, and Direction-Research Institute for Constructions and the Construction Economy, and Institute for Scientific and Technical Creativity), and with a comparison yield of 80-85 percent for thermal water heaters, leads to:

$$q = 364.03 \left[\frac{kg\ c.c.}{m^2 \cdot an}\right] \cdot 0{,}416 \cdot 0{,}35 \cdot \frac{1}{0{,}8\ (0{,}85)} = 66.366{,}1 \left[\frac{kg\ c.c.}{m^2 \cdot an}\right],$$

a value that agrees with the corresponding calculated figure for the average annual effective savings of 60-70 kg c.c./m^2 year, obtained from tests.

$$q_{ef} = q \times (1 - 0{,}341) = 364{,}03 \left[\frac{\text{kg c.c.}}{\text{m}^2 \cdot \text{an}}\right] \times$$

$$\times 0{,}650 \cong 240{,}0 \left[\frac{\text{kg c.c.}}{\text{m}^2 \cdot \text{an}}\right] \qquad (4)$$

Given the distribution by components indicated in table 1, the theoretical potential of the solar resource for Romania can be detailed as shown in table 3.

The data in table 3 differs by only 4.5-5 percent from the estimates of the Commission for Energy Conservation (table 2), and will thus continue to be used. Because the indirect solar energy stored in the natural water cycle (hydraulic energy), as well as the energy stored in natural photosynthesis processes, will not be treated in detail in the present paper, we will make the following comments:

Hydraulic energy represents the total manifestations of the water cycle in nature. In the case of the forecasts made in Romania, this potential--although of a solar nature--is not included among the unconventional sources. In the United States the hydraulic energy is included in the category of unconventional, inexhaustible resources, creating a great deal of confusion about the energy capability and the installable potential of the solar source in that country [3], [4].

We will also point out that the technically installable hydroelectric power potential must in no case be confused with the figure shown in table 3. This potential is established as a function of possible locations (storage capacities, differences in levels, flows, and so on). According to recent evaluations [5], Romania's technically feasible hydroelectric power potential is about 40 TWh/year, a figure which corresponds to about 0.025 percent of the value of the theoretical hydroelectric potential given in table 3.

Of the total figure in table 3, about 0.3 percent--that is approximately 20 million t.c.c. per year--are currently obtained in the form of vegetal resources, which however are not used for energy purposes except to a very small extent (wood and some vegetal waste in agriculture, biogas, and so on).

1.2 Installable Potential of the Solar Resource in Romania

To establish the installable potential of the solar resource in Romania we have used the estimates of the report of the Commission for Energy Conservation [1]. These values assume in the intermediate and long term, the achievement of technologies that are economically competitive with conventional energy technologies in their rapid development.

For Romania's conditions, it has been estimated that the installable potential of the solar resource can represent about 0.1 percent of its theoretical potential (excluding hydroelectric power), resulting in:

$$E_{amenaj.\ solar} = (E_{solar\ tot.} - E_{solar\ hidro.}) \times 0{,}1\% \cong$$

$$\cong 38 - 40 \text{ mil. t c.c./an} \qquad (5)$$

where amenaj. = installed; tot. = total; hidro. = hydraulic

Table 4. Evolution of the capability to store solar energy for meeting heating needs (scenarios A and B).

Tabelul 4

Evoluția capacității de utilizare a energiei solare pentru acoperirea necesarului de căldură (scenariile A și B)

Anul			1981	1982	1983	1984	1985	1990	1995	2000
Producție anuală [$x10^3 m^2$] (1)	sc.	A	170	340	680	1250	2500	3600	3500	4000
	sc.	B	170	255	383	575	860	6500	10500	13400
Ritm mediu anual de creștere a producției (2)	sc.	A		←——1,95——→			←1,04→		←1,03→	←1,025→
	sc.	B			←——1,5——→				←1,1→	←1,05→
Capacitate instalată (cumulată) [$x10^3 m^2$] (3)	sc.	A	170	500	1180	2250	4850	19350	35850	54850
	sc.	B	170	425	808	1383	2243	19200	62900	123000
Capacitate de economisire*) [$x10^3$ tcc/an] (4)	sc.	A	11	33	75	173	408	1593	2950	4500
	sc.	B	11	32,5	67	111	185	1580	5150	10100
Capacități de producție tip Sadu [nr.] (350 mii m^2/an) (5)	sc.	A	1	1	2	4	7	9	10	12
	sc.	B	1	1	1	2	3	19	30	40

Key: (1) Annual production ($x10^3$ m^2)
(2) Average annual rate of production growth
(3) Installed capacity (cumulated) ($x10^3$ m^2)
(4) Savings capabilities *) ($x10^3$ tcc/year)
(5) Production capabilities of the Sadu type (350,000 m^2/year)
*) This takes into consideration the additional 15-20% contribution of passive systems for space heating

1.3 Geothermal Resources in Romania: Energy Potential and Exploitation Possibilities

The geothermal resources existing in 14 zones in Romania, and found through geologic studies conducted by MMPG (Ministry of Mines, Petroleum, and Geology), are represented by geothermal water at temperatures between 40 and 120 ^{o}C (and expected to reach as high as 170 ^{o}C) and at average flows per drilling of 30-35 m^3/h.

Heat can be extracted from geothermal water for energy purposes by cooling it to about 30-40 oC, after which the water can be used for therapeutic and recreational baths, for heating the ground and irrigation, and for reinjection into deposits (so as to conserve the underground reserves and avoid chemical and thermal pollution).

The temperature difference that can be used for energy purposes in a first stage is about 50 ^{o}C (varying between 10 and 70 ^{o}C), providing a total exploitable amount of heat of 2,670,500 Gcal/year (1,557,500 from known reserves, and 1,113,000 from foreseen reserves), assuming that 430 exploitation drillings are made in addition to the 85 that are currently being exploited.

In a second stage of utilization of geothermal water (below 40 °C), for recreation, treatments, and ground heating, we can depend on a total flow of some 9750 m^3/hour, containing a total amount of 1,165,000 Gcal/year.

Geothermal water zones with predominantly energy exploitation possibilities, at an average temperature higher than or equal to 70 °C, represent more than 75 percent of the total exploitable potential of the resource; some of these are Sacuieni-Harghita, Bors, Girisu de Cris, Ciumeghiu-Salonta, Sinicolau, and Cebza-Banloc. A second category of geothermal zones is represented by those where the water temperature falls between 55 and 65 °C (Timisoara-Varias, Arad-Chisineu, Carei, Satu Mare), where the relatively low energy exploitation can be compensated by therapeutic and recreation uses. A third category of zones includes geothermal water that is primarily of a therapeutic and recreational nature (Felix, Herculane, Caciulata-Cozia, Tusnad).

The total energy potential of the geothermal resources exploitable in the 14 zones of interest in our country, is about 3.8 million Gcal/year, representing an equivalent of about 550,000 t.c.c. per year. The full valorification of this potential could release some 700,000 t.c.c. per year to produce the same amount of heat with conventional fuels in thermal plants.

1.4 Energy Potential of Other Unconventional Sources Designed to Meet Heat Needs

By agreement, biogas and household wastes are included in the category of new sources. It should be stipulated however, that they in fact represent a certain portion of solar energy stored in the form of biomass through natural photosynthesis processes.

The evaluation of the energy potentials of these resources, and the programs for exploiting them during the forecast period, are the result of studies undertaken at specialized institutes and summarized by CNST (National Council for Science and Technology) during 1980 [7].

It is thus estimated that by the year 2000, the energy contribution of biogas derived from agriculture, the food industry, and urban sewage treatment plants, will reach 450,000 t.c.c. per year, while the energy contribution from the exploitation of household wastes will release about 200,000 tons of conventional fuel per year.

At this point we must point out that for the forecast period (1980-2000), the energy contribution from the valorification of these resources will increase rapidly during the first half of the period, followed by a relatively slower growth as the economical installation possibilities become saturated.

2. Evaluation of Utilization Capabilities of New Sources to Assure Romania's Heating Needs

The utilization capability of the solar resource in the form of low temperature heat (hot water for households, sanitation, technology, and space heating) can be determined from the real capability for economic industrial mass production of solar collectors. It is well known that the construction and achievement of nominal

Table 5. Contributions of new sources of energy and financial requirements forecast up to the year 2000, thermal applications.

Tabelul 5

Aportul suplimentar nou de energie și efortul financiar corespunzător pînă la orizontul de prognoză 2000 – aplicații termice

(1)	(2)	(3)			(4)		
		Variant I					
		1985	1990	2000	1981 – 85	1986 – 90	1991 – 2000
Energie solară (5)	20000	400	1593	4500	12265*)	30000*)	75000*)
Biogaz (agricol) (6)	250	70	230	250	2300	7000	800
Biogaz (urban) (7)	200	80	140	180	300	1445	580
Deșeuri urbane (8)	200	20	150	200	435	800	700
Ape geotermale (9)	700	400	650	700	377	761	500
TOTAL$_A$	21350	970	2763	5830	15677	40000	78580
		Variant II					
Energie solară	20000	185	1580	10100	5700*)	30000*)	110000*)
Biogaz (agricol)	250	70	230	250	2300	7000	800
Biogaz (urban)	200	80	140	180	300	1455	580
Deșeuri urbane	200	20	150	200	135	800	700
Ape geotermale	700	400	650	700	377	761	500
TOTAL$_B$	21350	755	2750	11430	9112	40000	112580

Key: (1) Type of resource
(2) Theoretical potential (thousand tcc/year)
(3) Energy contribution through valorification (thousand tcc/year) savings
(4) Financial requirements per stage (thousand lei)
(5) Solar energy
(6) Biogas (agricultural)
(7) Biogas (urban)
(8) Urban waste
(9) Geothermal water
*) Excluding investments in production capabilities for solar collectors

production capabilities at the Sadu enterprise has resulted in a production of 170,000 m^2 of solar collectors in 1981, which will reach 350,000 m^2 in 1983. Given a special effort in the development of solar collector manufacturing capabilities, we propose the consideration of the following scenarios for collector construction, capabil for economy, and contributions of conventional fuel savings (table 4).

Table 4 sho that in order to attain the proposed goal of saving 400,000 t.c.c. for 1985, scenario A requires the construction and operation of at least seven Sadu-type production capabilities; by the year 2000, at the indicated rate of production growth, the savings capability could amount to about 4.5 million t.c.c. per year, that is, over 2 million t.c.c. per year over current estimates. Scenario B assumes

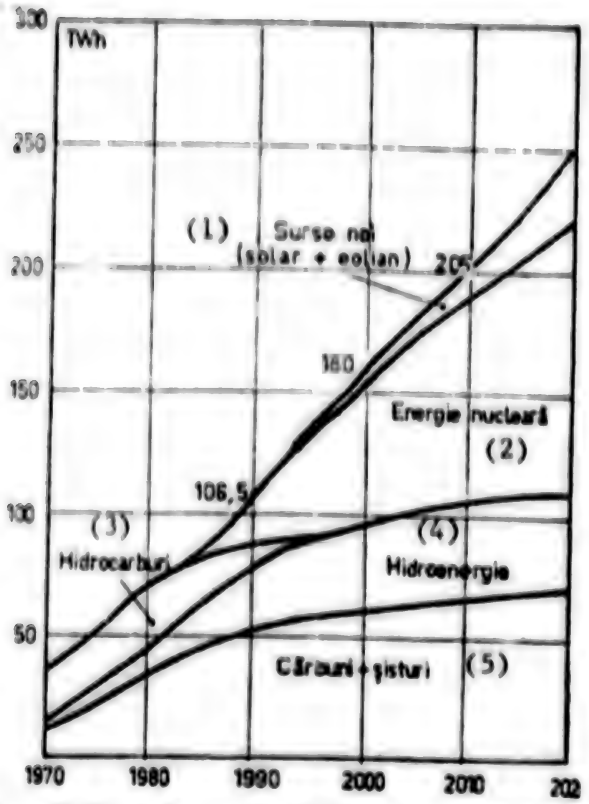

Fig. 1. Producția de energie electrică — prognoza ponderii diferitelor tipuri de resurse în perioada 1980—2020. Scenariul „de bază".

Figure 1. Electric power production: forecast for different types of resources for the 1980-2020 period. Basic scenario.

Key: (1) New sources (solar + wind)
(2) Nuclear energy
(3) Hydrocarbons
(4) Hydroelectric power
(5) Coal + shale

a financial effort spread out over a period of 10 years, so that by the end of that period the savings capability would be practically equal to the first alternative, but would imply an energy contribution of some 10 million t.c.c. per year, or five times the current estimates for the valorification of the resource.

Both scenarios are correlated with the forecasts of housing construction rates in Romania in future periods. For instance, if we consider that about one million apartments will be built during the next five-year plan, and that 20-30 percent of these will be equipped with solar water heaters, it will be necessary to install at least 1.5 million m^2 of collectors in urban environments, or about 60 percent of the installed capacity. The remaining solar collectors will be used for technical purposes in the industrial sector. This development will be possible only if the solar installations are built so as to enable maximum fuel economies under our country's circumstances (70 kg c.c./m^2 year), which means installations that operate during the entire year.

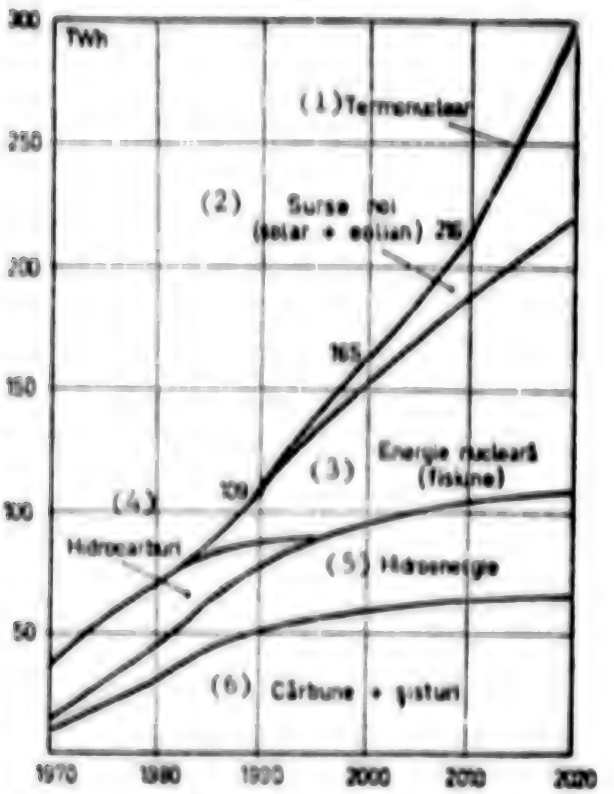

Fig. 2 Producţia de energie electrică - ponderea pentru diferitele tipuri de resurse în perioada 1980 - 2020. Scenariul „alternativ".

Figure 2. Electric power production: forecast for different types of resources for the 1980-2020 period. Alternative scenario.

Key: (1) Thermonuclear
(2) New sources (solar + wind)
(3) Nuclear energy (fission)
(4) Hydrocarbons
(5) Hydroelectric power
(6) Coal + shale

Special attention must be devoted to the introduction of installations to exploit solar heating in industry, agriculture, and animal raising, as well as in technologic processes, where operation throughout the year will result in maximum economy. This trend is in fact characteristic in France and the United States [3], [6], countries that have achieved the greatest progress in the field so far. The forecasts for solar-heating production in the United States, for instance, estimate that industrial applications (for technologic purposes) will amount to 60 percent, and that households will add up to 40 percent [4]. This means that Romania must also re-evaluate the possibilities for implementing technologic approaches in the industrial sector, in terms of increasing the proportion of installed capacities for the 1986-1990 five-year plan and for future periods.

Based on the completion of goals during the 1975-1980 period, on the experience that has been gained, and on the preparations that are being undertaken, an extensive utilization in thermal applications is expected during the coming periods. An improvement is also expected in the economic indicators of exploitation solutions, which will enable a broader expansion of exploitation technologies in both the housing and the technical process sectors. The design of technical processes specific to industrial branches which consume thermal energy will be closely correlated with the use of the new unconventional resources as sources of energy.

Two alternatives have been formulated to summarize the data for the valorification of new sources of energy in thermal applications:

Alternative I corresponds to current provisions regarding the valorification of new sources in accordance with [7] and the data shown in table 4, scenario A;

Alternative II is an alternative program, formulated to assure a more substantial contribution from solar energy, so as to substitute the largest possible portion of the country's primary energy needs in future stages, based on the data in table 4, scenario B.

We note that for biogas (from the agricultural and urban sectors), household waste, and geothermal water, the installation possibilities gradually become saturated toward the second half of the forecast period, so that by the year 2000 we are witnessing the practical saturation of the possibilities for exploiting the potential of these resources (the valorification potential becomes equal to the theoretical potential of the resource).

This has been the reason for proposing a second alternative program in which the valorification of the direct solar energy potential is more accelerated toward the second half of the forecast period.

An analysis of table 5 makes it possible to observe that while the practical application of alternative B would lead--during the same time interval--to a 1.95 to 2.0-fold increase in energy contribution, the financial efforts made during the same time interval would only increase 1.25 to 1.3-fold, due particularly to improved valorification technologies and higher labor productivity during the second half of the forecast period. It is estimated that this alternative is justified and can be achieved, in particular due to the outstanding energy potential of the solar resource under Romania's circumstances.

7. Forecast for Electric Power Production from New Sources Until the Year 2000 (2010)

Prospects for electric power production from new sources are possible only by correlating electricity consumption and production possibilities over the period under consideration. The contribution of various technologies in assuring the economic electricity needs is a matter of technico-economic competition, and at the same time depends heavily on the availability of various types of primary energy resources. When the availability of the various primary energy resources is limited, the contribution of one or another of the alternative resources depends on its utilization capability.

Table 6. Installed power and production of electricity, by types of resources (1980-2020 forecast).

Tabelul 6

Puterea instalată și producția de energie electrică, pe tipuri de resurse (prognoză 1980-2020)

(1) An / (2) Tipul resursei	1970		1980		1990		2000		2010		2020	
	(3) Putere instalată MW	(4) Energie produsă TWh	Putere instalată MW	Energie produsă TWh	Putere instalată MW	Energie produsă TWh	Putere instalată MW	Energie produsă TWh	Putere instalată MW	Energie produsă TWh	Putere instalată MW	Energie produsă TWh
Hidrocarburi (incl. gaze naturale) (5)	3 095	20,2	6 700	27	3 500	10						
Cărbune, șisturi combustibile (6)	2 151	11,0	6 900	32	11 500	54	13 000	58	14 500	66	15 000	70
Hidroenergetic (7)	1 171	3,0	3 500	13	9 000	24	15 000	39	15 500	40	15 500	40
Energie nucleară (8)					3 960	20	10 000	58	15 000	85	20 000	110 120
Surse noi (eoliană) (9)												
Variantă bază (10)					500	0,5	2 000	5	5 500	14	10 500	26 30
Variantă alternativă (10)					500	1	4 000	10	10 000	25	30 000	65 70
Termonuclear (11)											1 000	4
TOTAL (12) Variantă bază	7 417	34,2	16 500	72	28 500	108,5	40 000	160	50 500	205	62 000	250
Variantă alternativă					29 000	109,0	42 000	185	55 000	230	81 000	300

Key: (1) Year
(2) Type of resource
(3) Installed power, MW
(4) Power produced, TWh
(5) Hydrocarbons (including natural gas)
(6) Coal + combustible shale
(7) Hydroelectric power
(8) Nuclear energy
(9) New sources (solar + wind)
(10) Basic scenario/alternative scenario
(11) Thermonuclear
(12) Total: basic scenario/alternative scenario

Under Romania's concrete circumstances, the specific restrictions imposed by the availability of conventional resources for electricity production are further complicated by the requirement to discontinue the importation of conventional fuels (oil and energy coal) following 1990, in order to assure the nation's energy independence. The increase in electricity production will be retained in the following decades even if the availability of conventional resources is gradually reduced.

The competing technologies for electric power production during the forecast period (1980-2020) will be thermodynamic conversion in solid fuel plants, as well as hydroelectric, nuclear, and solar coversions.

The forecast for total electricity production during the period under consideration has used a normative approach--for the first part of the period (1980-1990), for which accurate figures have been provided by the Directives of the 12th Congress of the RCP--with the change in electricity production during this period being extrapolated along a curve constructed from the envelope of the corresponding contributions from each resource under consideration.

4.1 Conventional Primary Resources Used in Romania for Electricity Production

Thermodynamic conversion--thermoelectric plants using hydrocarbons (oil and natural gas) and coal (including shale in the near future)--currently provides over 80 percent of the electricity production, more than one half of this being based on hydrocarbons.

The potential of electricity production with hydrocarbons is gradually being reduced, so that after 1995 hydrocarbons will be used only to provide support fires. Under these conditions, thermodynamic conversion in the future will be based exclusively on solid fuels--coals and combustible shales. Taking into consideration the assured reserves of soft coal, lignite, and shale, estimated to be about two billion t.c.c., as well as the industry's (steel in particular) requirements of solid fuels, thermodynamic conversion based on this primary energy vector can be developed at such as rate as to reach a maximum production of some 70 TWh/year at the end of the forecast period. This implies the achievement of a production of about 110-120 million tons of lignite equivalent per year, which will assure the operation of conversion installations and mining exploitations at a nominal rate for another 30-50 years before exhausting the resources known at this time.

According to current estimates [5], the usable hydroelectric potential amounts to about 40 TWh/year of electricity production.

The potential of fission nuclear power, represented by Romania's own reserves of fissionable raw materials exploited in nuclear power plants with thermal and (probably after the year 2000) rapid reactors, will reach a maximum level and ceiling at about 120 TWh/year of electric power. The potential of thermonuclear-electric conversion--unlimited in principle--will not become operational before 2010, so that the contribution of this technology to the production of electricity for the country's socioeconomic development during the forecast period will not be significant.

4.2 Use of Solar Energy for Electricity Production

The theoretical potential of the solar resource for electricity production through thermodynamic and direct energy conversion can be evaluated by assuming an overall conversion yield of 15 percent (maximum yield obtainable with current technologic achievements). Under these conditions, the theoretical potential of the country's total area is:

$$E_{\text{...}} \text{ ...} \quad 35.966 \cdot 10^{9} \left[\frac{\text{t.c.c.}}{\text{an}}\right] \times$$

$$0.15 \geq 5.4 \cdot 10^{9} \left[\frac{\text{t.c.c.}}{\text{an}}\right], \qquad (6)$$

which expressed in kWh represents:

$$E_{\text{...}} = \frac{5.4 \cdot 10^9 \left[\frac{\text{k.c.}}{\text{an}}\right] \cdot 7 \cdot 10^9 \left[\frac{\text{kcal}}{\text{k.c.}}\right]}{860 \left[\frac{\text{kcal}}{\text{kWh}}\right]} =$$

$$= 43.860 \cdot 10^9 \ [\text{kWh/an}]$$

Assuming that solar energy is collected and converted into electricity over only 0.5 percent of the country's area *), this could assure a production capability of about 80 TWh/year, which is nearly the value of Romania's electric power production in 1980.

It should be added here that the technologies for exploiting the solar-electric conversion potential are still far from maturity, and in any case still not yet economically competitive with conventional approaches. However, the resource's potential fully justifies the efforts undertaken at this time for research and development in solar-electric conversion technologies. It is estimated that the transition to high capacity industrial installations for electric power production will only occur after 1990 [6], [7].

3.3 Romania's Wind Energy Potential

The installable wind potential represents a fraction of the figure shown in table 3, being proportional to the energy of moving air masses at about 200 m above ground. This height was selected under the assumption that the wind generators that can be presumably be built (because of technologic limitations) will not have blade diameters larger than this value. However, the idea is already being proposed for wind generators installed along corridors that accumulate wind energy [8], which can recover a larger fraction of the resource's theoretical potential. Assuming the use of wind generators with diameters of 150 m, the technically installable potential for our country is [9]:

$$E_{\text{...}} = 1.730 \cdot 10^9 \left[\frac{\text{k.c.}}{\text{an}}\right] \times \frac{\rho_0 + \rho_{150}}{\rho_0 + \rho_{11000}} \times \frac{H_{150}}{H_{atm}} \quad (7)$$

where eolian = wind; given that

$\rho_{150} = \rho_0$ $\qquad H_{150} = 150$ m

$\rho_{11000} = 0.24\ \rho_0$ $\qquad H_{atm} = 11000$ m

ρ_0 = air density at sea level, we will have:

---

*) Considering a ratio of about four between the total land area involved (S_{tot}) and active mirror areas (S_{activ}), we have an active area of about 292 km^2.

$$E_{vantului} \quad 1.730 \times 10^8 \left[\frac{\text{t c.c.}}{\text{an}}\right] \times \frac{2\,\rho_0}{1.24\,\rho_0} \times$$

$$\times \frac{150}{11000} = 3{,}8 \times 10^7 \left[\frac{\text{t c.c.}}{\text{an}}\right] \qquad (8)$$

This potential could be converted into electrical or mechanical power in installations with an overall yield of 40 percent, in which case we obtain:

$$E_{vantului\ util} = \frac{3.8 \times 10^7 \left[\frac{\text{t c.c.}}{\text{an}}\right] \times 0.4 \times 7 \times 10^6 \left[\frac{\text{kcal}}{\text{t c.c.}}\right]}{860 \left[\frac{\text{kcal}}{\text{kWh}}\right]} \cong$$

$$\cong 125 \ [\text{TWh/an}] \qquad (9)$$

where util = useful.

This value correlates with the evaluation of Romania's mountain area wind potential, under the assumption that wind generators would be installed on all the mountains with a density of two units per linear crest kilometer, and two units on each square kilometer of mountain side; according to this evaluation, the mountain area wind potential represents 60-70 TWh/year [10].

The magnitude of this potential (representing 50-60 percent of the technically installable wind potential for Romania's entire territory), concentrated in the mountain area, is not surprising, since this area is recognized as a reservoir of natural energy.

3.4 Energy Potential of Waves Along Romania's Coast

Based on current estimates in several papers [11] and at the present levels of knowledge, the installable potential of waves along Romania's coast on the Black Sea is about 4 TWh/year, representing 10 percent of the technically installable potential for hydroenergy resources in Romania.

The dynamic characteristics of waves in the Black Sea are relatively modest, being 8-10 times lower than similar energy indicators for other area on earth (Sea of Japan, North Sea, and so on), where the use of wave power is considered economical. Taking the data supplied by [1], where the installable potential is estimated to be 10 percent of a resource's theoretical potential, and correcting the average data for the world's seas with Black Sea data, we obtain:

$$E_{valuri} = 130 \times 10^9 \frac{\text{t c.c.}}{\text{an}} \cdot 0.16 \times 0.1 \cong$$

$$\cong 2.1 \times 10^6 \left[\frac{\text{t c.c.}}{\text{an}}\right] \qquad (10)$$

where valuri = waves.

This potential could be converted into electrical or mechanical power with an overall conversion yield of 25 percent, in which case we obtain:

$$E_{\text{el. mec. valuri}} = \frac{2{,}1 \times 10^6 \left[\frac{\text{t c.c.}}{\text{an}}\right] \times 0{,}25 \times 7 \times 10^6 \left[\frac{\text{kcal}}{\text{t c.c.}}\right]}{860 \left[\frac{\text{kcal}}{\text{kWh}}\right]} \cong$$

$$\cong 4{,}3 \text{ [TWh/an]}, \qquad (11)$$

(where el. mec. valuri = electrical mechanical waves) a figure which is in good agreement with our own potential evaluations [11].

3.5 Possible Scenarios for the Development of Solar-Electric Power in Romania Up to the Year 2020.

As mentioned earlier, a combined normative-exploratory technique was used to forecast the total production of electricity in Romania. For the second part of the forecast period (1990-2020), extrapolations indicate the following trends:

Concurrent with a reduction in the contribution of hydrocarbons (oil and gases) to satisfy the country's energy needs, the requirements for electricity will increase since the latter is the only form of energy capable of providing the energy support for technologies which were previously supported by hydrocarbons. This explains why the consumption of electric power will grow rapidly even though the total consumption of primary energy will increase slowly over the forecast period; as a result, the proportion of electric power in the total consumption of resources will probably exceed 30 percent after 2020. This trend reflects the situation forecast for the world as a whole [1];

The relatively rapid growth in the production of electric power is a means for exploiting the significant reserves of low grade coal and fuel shale which will make a major contribution to the country's energy ind pendence. During the 1980-1990 period, this growth will amount to average annual rates of about 5 percent, a figure which will persist until about the middle of the first decade of the next century;

During the first decade of the next century, the rate of growth in the production of electricity from the major conventional resources will begin to decrease when it reaches saturation levels, concurrent with reaching a high level of economic development which will be able to assure continued socioeconomic development with increasingly lower consumptions of energy (including electricity).

In the light of the trends mentioned above, the extrapolation curve for electricity production in Romania will show (see figures 1 and 2) an inflection toward saturation around the middle of the first decade of the 21st century. At the end of the forecast period, the production of electricity will therefore be about 250 TWh/year. Considering that the production of electric power has been somewhat over 72 TWh/year during 1980, the average annual growth rate for the forecast period (1980-2020) will be 3.16 percent--a rate which is taken as a basis in the scenario shown in figure 1.

Table 7. Installed power and electricity production from solar and wind energy (1980-2020 forecast).

Tabelul 7

Puterea instalată și producția de energie electrică din energia solară și eoliană (prognoză 1980-2020)

(1)	1980		1990		2000		2010		2020	
(2) Tehnologia	MW	TWh	MW	TWh	MW	TWh	MW	TWh	MW	TWh
(3) A. Scenariul „de bază"										
Centrale solaroelectrice (4)	0,03		1		100	0,15	1000	2,0	4000	7,0
Centrale eoliano-electrice (5)	0,02		300	0,5	2000	5,0	4000	12,0	6000	19,0
TOTAL A	0,05		301	0,5	2100	5,15	5000	14,0	10000	26,0
(6) B. Scenariul „alternativ"										
Centrale solarotermoelectrice	0,03		1		100	0,15	1000	2,0	4000	7,0
Centrale eoliano-electrice	0,05		500	1,0	10000	10,0	20000	23,0	20000	59 63
TOTAL B	0,08		501	1,0	10000	10,15	10000	25,0	30000	66 70

Key: (1) Year
(2) Technology
(3) A. Basic scenario
(4) Solar-electric plants
(5) Wind-electric plants
(6) B. Alternative scenario

The alternative to this scenario is the one in which an acceptable average annual growth rate in the production of electricity would be about 3.6 percent during the entire period (1980-2020), thus expecting a production of 300 TWh/year at the end of the forecast period (figure 2, alternative scenario).

The necessary contribution of electricity produced from solar energy by 2020 in the two scenarios, can be determined by taking into account the saturation of conventional resources of primary energy; as presented in figures 1 and 2, and in table 6, this will be 26-30 TWh/year for the basic scenario, and 66-70 TWh/year in the alternative one.

An examination of table 7 discloses the following:

The penetration of solar energy in the production of electricity will become significant as early as 1990, when 350-500 MW will be installed mainly in the form of wind generators. Wind-electric conversion will play the major role in electricity production from the solar resource in both forecast scenarios, but

Table 8. Proportion of energy resources in electricity production in Romania (1980-2020) in percent.

Tabelul 8

Ponderea resurselor de energie în producția de energie electrică a României (1980-2020), în %

(2) Tipul resursei / (1) Anul	1980	1990	2000	2010	2020
			(3) Varianta „de bază"		
Cărbune, șisturi (4)	32.16	41.44	49.77	36.25	32.20	28.0
Hidroenergie (5)	8.77	18.05	22.11	24.37	19.51	16.0
Hidrocarburi (6)	59.07	37.51	9.22	–	–	–
Energie nucleară (7)	–	–	18.43	36.25	11.46	14.0
Solar + eolian (8)	–	–	0.47	3.13	6.83	10.1
Termonuclear (9)	–	–	–	–	–	1.6
			(10) Varianta „alternativă"		
Cărbune, șisturi	32.16	41.44	49.54	35.15	30.55	23.3
Hidroenergie	8.77	18.05	22.02	23.63	18.53	13.4
Hidrocarburi	59.07	37.51	9.17	–	–	–
Energie nucleară	–	–	18.35	35.15	39.53	40.0
Solar + eolian	–	–	0.92	6.07	11.57	22.0
Termonuclear	–	–	–	–	–	1.3

Key: (1) Year
(2) Type of resource
(3) Basic scenario
(4) Coal, shale
(5) Hydroelectric power
(6) Hydrocarbons
(7) Nuclear energy
(8) Solar + wind
(9) Thermonuclear

especially in the second alternative, which assumes a 50-60 percent utilization of the resource's installable potential by 2020. This is possible because the technology for wind-electricity conversion is very close to technical maturity, and because the system is in principle more competitive given the long utilization life of the installed power (2000-5000 hours/year);

Romania's specific geographic conditions can assure only 1500-2000 hours/year of sun shine for solar-electric plants. In addition, the technology for solar-electric plants with concentrators and high temperature cycles, as well along photovoltaic lines, still requires the completed development of relatively large specific systems, particularly in terms of storage. According to worldwide forecasts, the research in that field will take at least another 10-15 years, which is why we believe that solar-electric plants will not play a significant role in the energy balance before the end of this century;

Table 9. Total energy contribution of new sources in Romania's balance of primary energy (1980-2020 forecast).

Tabelul 9

Aportul energetic global al surselor noi în balanța de energie primară a României (prognoză 1980–2020)

Anul	1985	1990	2000	2010	2020
(1) Creșteri medii anuale a consumului de energie primară	← 2,7 ÷ 3,4 →	← 2,1*) →	← 2,1*) →	← 1,9*) →	
(2) Consum de energie primară în R.S.R., 10^6 t.c.c.	111 – 114,8	127 – 136	160 – 172	198 – 222	239 – 250
(3) A. Scenariul „de bază", $\times 10^3$ tcc/an					
(4) Aplicații termice: (5) Solar	100	1500	4000	5500	7500
(6) Geotermal	400	650	700	700	700
(7) Biogaz (agric.)	70	230	250	250	250
(8) Biogaz (urban)	80	140	180	190	200
Deșeuri urbane (9)	20	150	200	210	220
Energie electrică (solar + eolian) (10)	8	228,5	1400	3700	7000
(11) Scenariul „bază"	978	2981,5	7230	10550	15870
(12) Ponderea surselor noi în balanța energetică, %	0,85 – 0,88	2,2 – 2,36	4,2 – 4,5	4,74 – 5,34	5,91 – 6,65
(13) B. Scenariul „alternativ", $\times 10^3$ tcc/an					
(4) Aplicații termice: Solar	185	1580	10100	13000	15000
Geotermal	400	650	700	700	700
Biogaz (agric.)	70	230	250	250	250
Biogaz (urban)	80	140	180	190	200
Deșeuri urbane	20	150	200	210	220
Energie electrică (solar + eolian)	8	336	2700	6750	20100
(14) Scenariul „alternativ"	763	3086	17216	21100	36170
(15) Surse noi în balanța energetică, %	0,66 – 0,69	2,27 – 2,43	10,0 – 10,7	9,5 – 10,6	13,6 – 15,3

Key: (1) Average annual growth in primary energy consumption, percent
(2) Consumption of primary energy in Romania, x10^6 tcc
(3) A. Basic scenario, x10^3 tcc/year
(4) Thermal applications
(5) Solar
(6) Geothermal
(7) Biogas (agricultural)
(8) Biogas (urban)

(9) Urban waste
(10) Electric power (solar + wind)
(11) Total basic scenario
(12) Proportion of new sources in the energy balance, percent
(13) B. Alternative scenario, $x10^3$ tcc/year
(14) Total alternative scenario
(15) Proportion of new sources in the energy balance, percent
*) Values taken as working hypothesis

After 2020, when in addition to conventional resources we will also witness a saturation of the wind potential, solar energy itself and thermonuclear energy will remain available to cover the increased needs for electricity imposed by the country's socioeconomic development.

Conclusions

The evaluated installable potential for solar resources in Romania, both for thermal applications and for the production of electricity by the end of the forecast period, is about 38-40 million t.c.c./year, a figure which must be interpreted as a potential capability for obtaining primary energy savings (through substitution).

To establish the means for attaining the objectives aimed at the valorification of solar energy in thermal applications during the forecast period (1980-2020), the utilization capability of this resource was evaluated starting with the possibilities of manufacturing solar collectors on an industrial scale. Two scenarios were formulated in this respect, whose application could lead, in the year 2000, to savings (through substitution) of 4, 5, and 10 million t.c.c./year, respectively.

The data regarding the valorification of new sources of energy in thermal applications is presented in two alternative scenarios, so as to assure the most substantial possible contribution from solar energy. Compared to scenario A, the practical application of scenario B could lead, during the same time interval, to a 1.95 to 2.0-fold increase in energy contribution, while the cumulated financial efforts would increase only 1.25 to 1.3 times.

Because of the territorial scattering of resources and the low specific energy per unit area, the installations for exploiting new sources of energy in thermal applications are distributed throughout the country. As a result, the necessary technical solutions will be economical in non-centralized applications, for supplying local consumers, depending on the level and nature of the energy delivered.

The theoretical potential of the solar resource to produce electric power through thermodynamic and direct conversion, assuming that collection and conversion is carried out over 0.5 percent of the country' area (about 1200 square kilometers), could assure a production of some 80 TWh/year. The resource's potential fully justifies the efforts undertaken in solar energy technologic research and development.

Romania's wind potential for producing electricity is evaluated at 60-70 TWh/year of installable power, which demands that particular attention be devoted to its valorification in the future.

The forecast period for electric power production from new sources has been extended to 2020, and correlated with the evolution of electric power production from conventional primary resources. The scenarios have aimed at a production of 250 and 300 TWh/year in 2020, which requires a contribution from solar-generated electricity (solar as such, and wind) of 26-30 TWh/year (basic scenario) and 66-70 TWh/year (alternative scenario).

Table 6, and figures 1 and 2, summarize the two forecast scenarios. The implementation of these scenarios would lead to the distribution of energy resources shown in table 8.

Considering the scenarios described for the valorification of new sources of energy, both in thermal applications and in installations for electric power production, the contribution of new sources in Romania's primary fuel balance is shown in table 9.

We stress the fact that the development of solar generated electricity (sun + wind) depends only on the rate at which specific technologic research and development will bring to maturity the necessary solutions, as well as on the capability of the national economy to provide equipment and manpower. The concept of energy independence is of the utmost importance here, insofar as these technologies do not require conventional fuels but rather process a practically inexhaustible and free resource.

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CREDIT FUNCTION IN ENTERPRISE SELF-MANAGEMENT DISCUSSED

Bucharest REVISTA ECONOMICA in Romanian No 12, 20 Mar 81 pp 11-12

[Article by N. Pretorian]

[Text] The fulfillment of the program to create the multilaterally developed socialist society demands mobilization of all the economy's material and human resources and utilization of them with maximum efficiency and the exemplary organization of economic activity at all levels. It is a major desirable of the current stage of development for economic activity to be at a high level of quality and for an emphatic process of savings to be achieved so that all economic activities are profitable. An important contribution to the fulfillment of this desirable must be made, on one hand, by use of the economic-financial levers under good conditions and, on the other, by increasing the responsibility of those called on to organize and head the production processes. In this context the particularly important role played by money and credit is brought out.

Determining the Size of the Stocks Depending on the Plan

The diversity and complexity of the production processes and the existence of a large number of economic units taking action within the division and specialization of labor mean that in view of the uninterrupted flow and efficient flow of the actual production process certain stocks of material values should be accumulated in the particular units with a view to changing them into the material goods needed for collective or individual consumption. Of course, if the existence of certain stocks of material values in the enterprises is economically justified, the problem of increasing them and giving them an economical size is one of the basic tasks of the leadership cadres, specialists and the financial-banking organs in the economy.

The goal of any economic activity is to produce goods needed by the end consumers, be they the population, the investment sector or export. Under these conditions stabilizing a certain volume of goods which remain in the enterprises awaiting their later transformation into consumable goods at first sight appears to be something acting in the direction of reducing the economic efficiency of the utilization of capital. In accordance with the mechanism for distribution of the national income, a portion of the economic development capital is utilized for financing circulating resources, that is, stocks and other expenses needed to achieve the production established by the plan. It is easy to understand that any trend toward increasing circulating resources beyond the level established upon distribution of the national income acts in the direction of changing the structure established by the plan for the national income and, according to the case, affects

the original development capital or the consumption capital. Precisely this negative trend should be barred from the way in which banking activity is organized and is carried out along the line of giving and paying back credit.

Credit's power of action in determining the size of the stocks of material values in the enterprises consists of the fact that the percentage of credit in the financing sources of circulating resources is around 50 percent of the capital utilized for this purpose. Appealing to credits, the enterprises enter into relations with the banking organs which, as specialized state organs in the financial-banking area, are required to come out if the enterprises' requests for credits are justified and if they do not lead to too great an accumulation of stocks and, thus, to a slowdown in the rotating speed of the circulating resources, which would be one of the negative aspects with effects on efficiency in the utilization of social labor.

Actually there is a continuing dialogue between the enterprises on one side and the banks on the other, a dialogue which often is of a contradictory nature, since, while the enterprises want to obtain an increasingly larger volume of credits, the bank is seeking for it to be as low as possible. At first glance the banks' position appears unjustified. Actually, the problem has another underlying cause. The enterprises which pay interest, sometimes substantial, wish to obtain from the bank a larger volume of credit in order to present the situation of the stocks obtained as "normal," although a portion of it is not justified by the flow of the production process. Rather, they come from unorganized supplies which run counter to their utilization in the production process and bringing to the enterprises greater quantities than the needs of production or simply, beside these needs, delaying in fulfilling certain orders and, as a result, prolonging the production cycles beyond the technological forecasts or even producing products without assured sale. Situations even appear where, due to certain qualitative defects or lack of respect for the contractual clauses, the enterprises do not receive the products manufactured and delivered on time.

Situations like the ones mentioned require supplementary capital and then the enterprise involves us to the banks to obtain credits, with normal interest if possible, which could exempt them from giving explanations to the holding organs for the shortcomings in their activity.

Working Capital for Fulfilling Plan Tasks

In connection with all this, certain problems are raised which depend on the area of principles and from which neither the bank nor the enterprises should deviate.

First, it should be mentioned that the principle of economic-financial self-management, which should be a basic rule in the leadership and flow of activity for each enterprise, among other things requires that an enterprise carry out its activity with a self-sufficient volume of capital established on the basis of the plan tasks in agreement with the technologies approved and with the method for establishing relations with suppliers and purchasers. Supply not only with what is needed and on time, strict respect for the production cycles as established by the technology approved and the production of high-quality products with assured sale are related conditions for carrying out the principle of self-management in practice. From the viewpoint of economic efficiency, the problem being posed is one not only of respect for the level of stock planned but also of reducing these stocks

...the level established in order to answer a basic requirement which provides that the largest possible production be obtained with the smallest possible capital.

Second, self-management has in view that the products be produced at the lowest possible cost, which has direct positive results not only for the increase in profits but also for reducing the capital which must be invested in production stocks, since these, too, should become smaller. From this viewpoint it should be noted that the utilization of a lower volume of stocks of material values from the viewpoint of efficiency has a value similar to that of reducing the material production costs and it permits the economy to have a more emphatic development.

Third, the principle of self-management requires that each enterprise cover completely its production costs from the incomes achieved through the utilization of productive capital and should establish development capital to stimulate the collective and labor capital and should also satisfy its duties toward society. An inverse situation is inconceivable, since it would mean that certain enterprises would consume more than they actually produce, live from others' work and not only would they not be able to create their own necessary capital but would remain financially in debt and the budget or the bank would have to cover their recorded lack of income.

Along with the basic requirements of self-management, financial legislation currently being utilized in Romania has clear provisions, that is, that the enterprises can request and the banks can give credits to finance the stocks and other production expenses only within the limit of the credit plan and the ceilings established for the crediting separately. What should have precedence for the bank are not the "justifications" made by the enterprise leaders in order to have access to a larger volume of credit but, on the contrary, the fact that by giving larger credits to an enterprise it is being "aided" not to take measures to eliminate as fast as possible the subjective economic causes or organizational causes which have led to an increase in stocks and request for supplementary credits. Although not always understood by the enterprise leaders, generally cadres with technical training, the bank's action is effective when it opposes giving supplementary credits over the limits resulting from the plan rather than when it gives such credits in order not to create tensions with the enterprises. The bank's intransigent positions must be supported by the enterprises' leaders but also by the bank workers as being the only correct way for the bank actually to contribute to the strict application of the principle of self-management in each economic unit.

Fourth, there are a number of situations in an enterprise when there are some interruptions in the movement of stocks independent of their will which require supplementary capital for short periods. Financial-banking legislation has provided for such situations the bank can give credits for temporary needs or other credits. Giving such credits, although for the enterprises they are a help in their activity and permits them to continue the supply process uninterrupted, from the point of view of the national economy it is an undesirable fact, since they actually are caused by having certain stocks remain a longer period of time in circulation and, thus, the beneficiary receives them late. For that reason, such credits should be treated with great attention by the bank and even with some reserve, and their use should be guaranteed by rapid elimination of the causes for them.

the possibility for an enterprise to pay back the credits received on time shows that the economic necessities which caused their being given, and the utilization by the consumption or sale of the stocks, have been accomplished, so that together with the movement of stocks a withdrawal of monies issued together with according of the credit also took place. Repayment of credits is an important point in implementing the enterprises' self-management and permits the bank to permanently supervise the way in which the enterprise manage their material and monetary capital. Both for the enterprises but, in particular, for the bank it is very important that when the credits are given it should be assured that they are paid back on time and that measures be taken on time so that the repayment actually is carried out. Resulting from this is the great responsibility of the bank as an organ of the state invested with rights to issue monies and place them into circulation for creating the opportunities for circulation of the goods within the production of goods. Carrying out operations of such importance, as giving and repaying credit and issuance and withdrawal of monies from circulation, the bank is a state organ through which action is taken to utilize monetary capital of the economy in a climate of order and discipline. Cooperating with the enterprises while carrying out economic activity, the bank must take action to continually supervise and influence the way in which the public money is being utilized.

Despite the fact that the enterprises' activity should take place according to the planned rules which have been forecast well and that the enterprise leaders are required to strictly apply the principle of self-management and self-leadership, it is possible that in certain situations in certain enterprises for larger stocks of material values than necessary are accumulated and thatproducts without sale are produced or that the countervalue of the goods delivered is not received on time, which gives rise to the phenomenon of tie-ups and, as a result, leads to not paying back the creditsreceived on time. What also is particularly negative is the situation where some enterprises, due to waste in the utilization of material and other nonproduction expenses, do not succeed in having the incomes obtained completely cover the production expenses incurred and, as a result, pay back the bank credits. These situations have negative effects primarily on the self-management of the enterprises concerned, also hindering them from applying this principle. Second, these situations place the bank in a particularly difficult situation, since a quantity of monies, the covering (guaranteeing) of which is doubtful, is kept in circulation through failing to have complete repayment of the credits. It should be clear both for the enterprises as well as for the bank that taking credit is like an advance and that it must be paid back from the incomes which the enterprises achieve.

Despite the particularly important role which credit has in placing monies into circulation and withdrawing them from circulation and in carrying out self-management in each enterprise, still there is the problem of the proportion within which the credit should participate in financing the enterprise's production activity. According to some opinions of monetary theoreticians, the enterprises with constant and continuous activity should cover their needs for capital generally from their own sources and should resort to credits only under special situations, for short periods and, in particular, for the circulation base of their activity, that is, starting point of delivery up to receipt of the countervalue of the products delivered. A certain justification for the intervention of credit in a greater proportion exists in the case of enterprises with seasonal activity, for which a difference in time exists between incurring the expenses, obtaining and utilizing the products, as is the case for economic units in agriculture.

under the conditions for applying the new economic-financial mechanism and the principles of self-leadership and self-management, the improvement and full utilization of the value levers such as credit, monies and interest are of great importance for obtaining high efficiency in economic and financial activity. By giving special attention to the giving of credit, by controling the way in which the material values credited are utilized by the enterprises and by taking measures on time to have complete repayment of the credits and on time, the bank directly aids the process of broader reproduction through the intermediary of credit and the issuance of money.

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CROATIAN DEMOGRAPHIC, EMPLOYMENT OUTLOOK TO 1985

Zagreb DELEGATSKI VJESNIK (supplement to VJESNIK) in Serbo-Croatian No 167, 15 Apr 81 p 8

[Text] Again in the coming medium-term period the population of SR [Socialist Republic] Croatia will grow at a relatively low, but stable rate of natural growth. The demographic pattern and tendencies in movement of the birth (fertility) and mortality rates, rates in vital statistics which are balanced at a low level, indicate this kind of growth in the coming 5-year period once again, it being expected that the population will grow at an annual rate of 5.8%, from about 4,624,000 in 1980 to about 4,760,000 in 1985.

Demographic development up to this point, with the long-term drop in natural population growth, will bring about a mild decline of the population group reaching working age, which because people are leaving that period of life at a faster rate will have the effect of a smaller growth of the population of working age as compared to that growth in the previous 5-year period; that growth will be 129,000 during this period.

Taking into account the factors that influence the labor force participation of the population, it is estimated that the labor force will increase at an average annual rate of 4.4%, from about 2,132,000 in 1980 to 2,180,000 persons in 1985.

The share of the labor force in the total population will be dropping at a slow rate from the 46.1 percent which is estimated for 1980 to 45.8 percent in 1985.

In the period from 1981 to 1985 the process of deagrarianization will continue; its rate will be dropping toward the end of the planning period. The share of the farm population in the total population will drop from 20.5 percent in 1980 to 14.9 percent in 1985. Analogously, the share of the farm labor force in the total labor force of SR Croatia will drop from 25.4 percent in 1980 to 18.4 percent in 1985.

The process of deagrarianization will have an essential impact on urbanization, and it is estimated that in 1985 about 58 percent of the population of SR Croatia will be living in urban settlements.

In the period up to 1985 SR Croatia can count on a net influx through interrepublic migration.

Socioeconomic Composition of the Population

	Number, in thousands		Composition	
	1980 Estimate	1985 Projection	1980	1985
Total population	4,624.0	4,760.0	100.0	100.0
Farm population	950.0	710.0	20.5	14.9
Nonfarm population	3,764.0	4,050.0	79.5	85.1
Labor force	2,132.0	2,180.0	100.0	100.0
Farm	541.0	401.0	25.4	18.4
Nonfarm	1,591.0	1,779.0	74.5	81.6

On the basis of natural population growth and movement of the population we can expect a slackening of the demographic pressure for new jobs in the coming period. However, because of the surplus manpower represented by registered unemployed (about 82,000) and workers employed abroad temporarily (about 225,000), there will still be the difficulties of creating new jobs and of unemployment in the coming medium-term period, especially since the opportunities for employment in the socialized sector will be appreciably smaller than they were in the previous 5-year period.

The growth of employment in the socialized sector is estimated at an annual rate of about 2.2 percent over the coming medium-term period. Employment in this sector is expected to increase by about 150,000 workers, and if we add in additions to the labor force in the private sector of nonfarm activities (on the basis of employment and self-employment), the growth of employment will be approximately 182,000. Assuming the above-average growth rate of employment in the private sector of nonfarm activities (about 5.4 percent), the overall growth rate of employment will be 2.4 percent.

Of the entire 654,000 potential candidates for employment in the socialized sector, including the private sector of nonfarm activities (consisting of about 317,000 persons reaching working age, 82,000 registered as unemployed, and 225,000 employed abroad temporarily, as well as about 30,000 people moving from private agriculture and migrating from other regions of the country), it will be possible to employ 332,000 new workers (182,000 new jobs and about 150,000 jobs made vacant by natural attrition).

This hiring will accordingly make it possible to absorb the influx of people reaching age, i.e., about 225,000, as well as a portion of the present pool of manpower awaiting employment. However, in view of the size of that reserve pool, a large number of workers will remain unemployed in our economy even at the end of this medium-term planning period. Assuming that a certain number (about 25,000) will find employment in private agriculture, there will still be about 290,000 workers either seeking employment (65,000 persons) or continuing to work abroad temporarily.

Given the need for a steady rise of labor productivity and a rise in the optimality and efficiency of economic activity, opportunities for growth of the labor force result above all from the following: a) fuller utilization and expansion of existing capacities as well as elimination of bottlenecks in production; b)

existing capacities as well as elimination of bottlenecks in production; b) more harmonious utilization of demographic potential; c) more rapid development of the [illegible] underdeveloped regions; d) stimulation of the development of small business and e) creation of conditions for fuller use of the land as well as for expansion of various forms of production cooperation between private farmers and organizations of associated labor.

Trend of Employment 1981-1985

	Size of labor force, in thousands			
	1980	1985	Index	1981-1985
Socialized sector	1,378.8	1,535.0	111.5	2.2
Economy	1,155.5	1,290.7	111.5	2.2
Industry	489.0	540.0	110.4	2.0
Noneconomic activities	223.3	243.9	109.4	1.8
Private sector				
Noneconomic activities	80.0	104.0	130.0	5.4
Total	1,458.8	1,638.6	112.4	2.4

The growth of employment in nonproduction jobs will be deliberately limited.

Thanks to an energetic policy of employing returnees from temporary employment abroad and continuing implementation of the program of measures and actions aimed at their return and economic reintegration, the number abroad will be reduced, and their entry into the labor force will be especially oriented toward development of service and production activities based on self-employment.

In the period between 1981 and 1985 there will still be a discrepancy between the occupations and background of personnel needed by the economy and the preferences of young people and the background of personnel graduating from school. In the coming period, then, the planning of manpower needs in organizations of associated labor and adjustment to those needs in the education of personnel will have a still greater role. This is to be promoted through the system of scholarships and other measures and especially by changing the status of production personnel in the system of remuneration in that a higher value will be placed on production work, more favorable working conditions will be created, working hours will be shorter for workers on the off shifts or doing heavy work or work harmful to health, etc.

The process of further improvement of the composition of the labor force with respect to education and skills will continue. There will, however, still be a shortage of personnel with secondary specialized training in production occupations and of personnel with the highest professional background, such as engineers specializing in the technical aspect of their respective fields.

[illegible]

CROATIAN PLANS FOR FUND ALLOCATIONS, LIVING STANDARD TO 1985

Zagreb DELEGATSKI VJESNIK (supplement to VJESNIK) in Serbo-Croatian No 167, 15 Apr 81 p 11

[Text] On the basis of the agreement on the bases of the Social Plan of SR [Socialist Republic] Croatia over the period from 1981 to 1985, in view of the estimated capabilities, use of the available funds would fall within these limits:

Use of Available Funds

In millions of dinars, 1980 prices

	1980	1985	Cumulative 81-85	Cumulative Growth Rate 81-85	Proportions, % 1980	1985
Available funds	384,716	476,635	2,153,961	3.8	100.0	100.0
I. Standard of living	276,846	339,458	1,543,746	3.7	72.0	71.2
1. Personal consumption	211,654	258,000	1,177,000	3.6	55.0	54.1
2. Social standard of living	65,192	81,458	366,746	4.0	17.0	17.1
a. Material costs	19,900	24,722	112,518	4.1	5.2	5.2
b. Capital investments	45,292	56,736	254,228	3.9	11.8	11.9
II. Economic investments in fixed capital	97,212	109,291	500,178	1.0	25.3	22.9
1. Public sector	89,565	100,019	457,671	0.7	23.3	21.0
2. Private sector	7,647	9,272	42,507	3.6	2.0	1.9
III. Government expenditure	4,340	4,678	22,382	1.0	1.1	1.0
a. Material costs	3,040	3,698	16,946	3.6	0.8	0.8
b. Capital investments	1,300	980	5,436	7.0	0.3	0.2
IV. Growth of inventories, reserves, differences in computational procedure, etc.	6,318	23,687	87,655	36.2	1.6	5.0

All sociopolitical communities, self-managed communities of interest, organizations of associated labor, banks and other self-managed organizations and communities shall in their specific activity guarantee that all forms of consumption fall within the limits of the funds actually available.

Within the framework of the total funds available the per capita standard of living would not exceed a rate of 3.4 percent, per capita personal consumption would grow at a rate of 3.2 percent, and economic investments in fixed capital would have a considerably slower growth of only 4 percent [sic].

Standard of Living

The trend of the standard of living over the next medium-term period will be adjusted to society's material capabilities, and the point of departure will be the principle that the living and working conditions of every individual shall depend on his own and total labor productivity as well as on solidarity and reciprocity in meeting the needs of the workers, working people and citizens for social services and a portion of their personal needs. The policy governing the development of the standard of living, as an integral part of the policy governing overall socioeconomic development will contribute to achievement of further progress in improving the living and working conditions of the working people and citizens and to strengthening their material and social security. Incorporation of the policy governing the standard of living into the plans of all development policymakers, especially organizations of associated labor, will contribute to more effective and uniform settlement of social welfare issues in accordance with the available material capabilities.

Assuming the projected 6.1 percent of material production, the standard of living would rise at an average annual cumulative rate of 3.7 percent. The standard of living in 1985 would thus be good [illegible] higher than in 1980.

The following [illegible] changes in the standard of living:

1980 prices

	Cumulative Growth Rates 1981-1985	Proportions, % 1980	1985
Standard of living	3.7	100.0	100.0
1. [illegible]	3.5	76.5	76.0
2. Social [illegible]	4.0	23.5	24.0
2.1. Material [illegible]	4.1	7.2	7.3
2.2. Investment	4.0	16.3	16.7

The share of personal consumption in total funds for the standard of living would decrease by [illegible], and the share of the social standard of living would be increased. Thus the social standard of living would grow at an average annual cumulative rate of 4.0 percent, while investments in housing construction would grow at an average annual rate of 4.1 percent or 4 percent in the period 1976-1980.

The total amount of personal incomes and other personal receipts would grow over the period from 1981 to 1985 at an average annual rate of 4.2 percent, i.e., in line with the growth of the income of organizations of associated labor. Real per-worker income would grow at an average annual rate of 2.0 percent, and real personal incomes per employee in the socialized sector would grow at the same rate. Labor productivity would at the same time be growing at a rate of 2.2 percent in the socialized sector.

Social welfare benefits must not exceed the growth of personal incomes in the socialized sector, and moreover average pensions will increase in line with the growth of average personal incomes. Personal income in the private sector would grow in line with the growth of the social product of the private sector, i.e., at an average annual rate of 3.4 percent. It is estimated that remittances of Yugoslavs working abroad would be declining slightly in real terms.

The projected growth of the social product in the private sector of agriculture, assuming higher labor productivity, would afford a rise in the purchasing power of the rural population and would mitigate the differences that exist in level of personal consumption and standard of living between rural and urban households.

Increased investment of the personal capital of individuals in housing construction is expected (at an average annual growth rate of 5.4 percent) as well as an increase in other expenditures by individuals (for taxes and contributions, nonproduction services, etc.), so that personal consumption of goods and production services would increase at an average annual rate of 3.6 percent.

The forecast growth rate of personal incomes and personal receipts, assuming a further rise in the index of employment per household, would afford fuller satisfaction of the total personal needs of the population along with qualitative changes in the structure of consumption.

This growth of personal consumption of the population would make it possible to increase stocks of commodities produced by the domestic economy. A moderate reduction in the relative share of food is expected along with a simultaneous increase in the share of consumption of industrial products as well as cultural goods and services.

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BRIEFS

CITIZENS' SAVINGS--As of 20 March, total savings of citizens amounted to 413.7 billion dinars, or 20.8 billion dinars more than at the end of 1980. Of the total, 241.3 billion dinars was in foreign exchange (an increase of 11.2 billion dinars compared to the end of 1980), while 172.4 billion was in dinars (an increase of 9.6 billion). [Text] [Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 13 Apr 81 p 9]

RIJEKA PORT--This port is receiving more and more requests from countries to increase the amount of their goods passing through the Port of Rijeka during the present 5-year period. But it is a big question whether it can do this because of the railroad problem and shipment of goods by freight car. Last year the port had a transit cargo turnover of 4.5 million tons, but a decrease is expected this year. The port expects to handle about 2 million tons of largely iron ore for Austria this year, in addition to 1.6 million tons of cargo for Czechoslovakia, and 550,000 tons for Hungary. Austria would also be interested in [using the port to] import coal from Canada and Czechoslovakia is asking guarantees to import new cargo. Hungary is interested in transporting iron ore. In 1981 as much as 300,000 tons of iron ore will be handled at the port, while in 1985 it is expected to be 700,000 tons. Port cargo turnover could be doubled if there were not problems in shipping goods by rail from the port. Certain countries like Hungary are interested in financing part of the port infrastructure in order to assure cargo shipment. [Excerpt] [Belgrade PRIVREDNI PREGLED in Serbo-Croatian 3 Apr 81 p 5]

ORE DEPOSITS IN MACEDONIA--Large deposits of lead and zinc ore were recently discovered near Kriva Palanka in Macedonia and represent a reserve for exploitation by the "Toranica" enterprise in Kriva Palanka which is expected to go into operation the end of this medium-term period. With this mining complex the "Zletovo-Sasa" eastern Macedonian mine will annually exploit about 2.5 million tons of lead and zinc ore, assuring work for the Titov Veles smelter and for the production of batteries at Probistip. A hard coal deposit was also recently discovered in this same area which is estimated at over 50 million tons of lignite, exploitation of which should soon begin and will be of great significance in improving the energy situation not only in Macedonia but in the country as a whole. Recent explorations have also shown that there are about 25 million tons of nonmetallic ores, largely bentonite, in Slavisko polje. In addition, results have been very good from exploration for rare metals, including uranium, in the Zletovica river valley near Probistip. Large deposits of lead and zinc

ore will enable the "Zletovo" mine to prolong operation for 150 or more years. Geologic preparations are being made to open the first uranium mine in this republic. Specialists from the "Zletovo" lead and zinc mine in Probistip near the ore deposits will have the largest share in this project. A quartz mine will also soon begin operation near the village of Stalkovic. [Excerpt] [Belgrade PRIVREDNI PREGLED in Serbo-Croatian 29 Apr 8 p 3]

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